

FINANCIAL TIMES

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D 8523 B

French Government: a balancing act for the bulldozer; Page 16

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World news

Business summary

Union Carbide in deal on Bhopal

Union Carbide, embattled US group, has reached a tentative settlement with lawyers acting for the victims of the 1984 Bhopal gas leak...

Rolls set for return to private sector

BOLLS-BOYCE, UK state-owned aircraft engine maker, is preparing a return to the private sector...

Irish blame UK in row over IRA terror suspect

BY HUGH CARNEGY IN DUBLIN AND MARGARET VAN HATTEM IN LONDON

MR DOUGLAS HURD, the British Home Secretary, will today explain the events which led to the abortive attempts in Dublin on Saturday to secure the extradition to Britain of an IRA suspect...

The Irish Government, which is infuriated over the way in which technical errors in the warrants for the extradition of Miss Evelyn Glenholmes have landed it in an embarrassing domestic row...

Mr Alan Dukes, the Justice Minister, said in a radio interview that Dublin would put its view "with some strength" to the British authorities...

They had not been sworn in front of a magistrate in London. He released Miss Glenholmes and pandemonium ensued as Irish police grappled with her and a large group of supporters...

Plunkett, said the provisional warrant was not sufficient and he released Miss Glenholmes again. This time she was driven away to an unknown destination.

Minister may quit over Sindona poisoning

By James Burton in Rome

MR MINO MARTINAZZOLI, the Italian Minister of Justice, yesterday held an urgent meeting with magistrates and the governor...

Star Wars talks

West German Economics Minister Martin Bangemann said he expected to sign an agreement this week with the US on a role for his country in Star Wars research...

Oil licences

The UK Government is expected to open up about 10,000 sq km of British soil to drilling rigs of the international oil industry.

Bomb victim named

One of two Lebanese who died in a bomb attack on a central Paris shopping arcade on Thursday was identified as Nabih Degher, police said.

Corsica attack

Separatist guerrillas burst into a Corsican hotel complex, tied up six members of staff and four tourists and set three bombs which partially destroyed the facility.

Ariane tests

Preliminary tests on a European Ariane-3 rocket which was aborted in the final seconds of countdown last week have shown it is in good condition and should be able to be launched on Friday.

Threat to flights

British Airways flights face disruption over Easter by engineering staff who have threatened industrial action if it fails to reopen talks on pay and job flexibility.

Spanish strike threat

Spain's Communist Workers' Commission are to push ahead with railway strikes during the Easter break despite withdrawal of support by the Socialist General Workers' Union.

Share deals denied

Downing Street firmly rejected reports that Mrs Margaret Thatcher, British Prime Minister, had traded in shares in her own name, saying rules about such matters had been observed.

Policemen killed

Left-wing guerrillas ambushed a police convoy in south-west Colombia, killing seven policemen and leaving more than 40 unaccounted for, according to officials.

Jailbreak battle

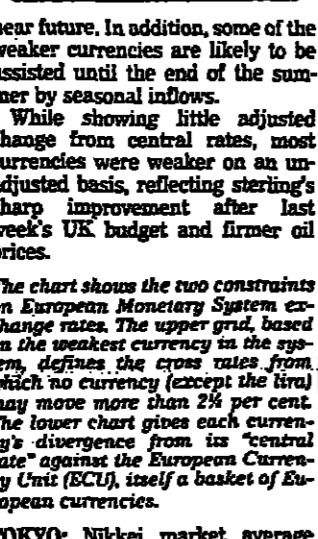
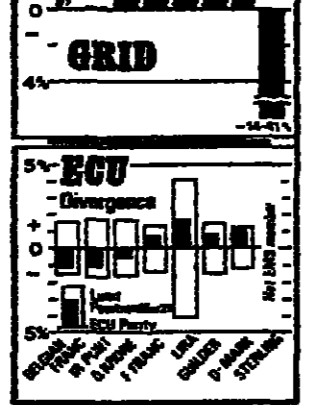
Two people died when 50 outlaws attacked a prison in Pakistan's Sindh province and set free 34 prisoners awaiting execution.

Hindus murdered

Suspected Sikh extremists shot dead three Hindus in a fresh outbreak of communal violence in northern Punjab state.

Grand Prix double

Brazilians Nelson Piquet, in a Williams, and Ayrton Senna, in a Lotus, respectively took first and second place in the Brazilian Grand Prix in Rio de Janeiro.



TOKYO: Nikkei market average rose 259.89 to close at a record 1,503,139 in the half-day session on Saturday. Buying was speeded up by a lead from, aided by speculation about another domestic discount rate cut. Leading prices, Page 37

HONG KONG has rejected US calls for new restraints on the export of textiles and garments to the US market. Page 5

SOVIET UNION is seeking observer status in the General Agreement on Tariffs and Trade. Page 3

PRIVATISATION in Britain has led to fewer jobs and worse employment conditions, according to a report which the TUC has sent to its member unions. Page 8

BRAZIL has decided to freeze development of Proalcool, its costly programme substituting alcohol for petrol. Page 4

McLEANS Industries, parent of US Lines which controls one of the world's biggest containerised shipping fleets, lost \$88.7m in 1985 and its bankers had agreed to relax some of the conditions on the more than \$1bn it owes. Page 19

KLM, national Dutch airline, begins a shares sale this week which will fund expansion plans and end the Government's majority stake. Page 22

GATX, Chicago-based conglomerate, has agreed to accept a \$544m cash takeover bid from Leucadia National, one of several Wall Street corporate raiders which have been pursuing the company. Page 18

GRIEVESON Grant, London stockbroker, said its top banking analyst, Mr Anthony Munns, as well as his assistant and an insurance analyst, were leaving to join merchant bank group Morgan Grenfell.

ADAM SMITH Institute has urged a radical overhaul of Britain's overseas aid programme to encourage privatisation in the Third World. Page 7

Confusion in London over Leyland talks

BY MARGARET VAN HATTEM IN LONDON

THE BRITISH Government will today set about picking up the pieces after the collapse of talks with General Motors over the sale of BL Trucks and Land Rover.

Mr Paul Channon, Trade and Industry Secretary, is expected to brief his Cabinet colleagues later today on his talks with GM representatives on Friday which led to a GM statement a few hours later announcing the collapse of the talks.

Senior ministers last night appeared confused and ill-informed on the affair, and were unable to confirm or deny GM's announcement that the Government had withdrawn Land Rover from the deal.

Members of the Cabinet committee set up to monitor the affair, which last met 10 days ago, appeared to have been taken unaware by the latest developments and insisted that if any decision had been taken to withdraw Land Rover, it was done without their participation.

Some suggested that Mrs Margaret Thatcher, the Prime Minister, Mr Channon and Mr Norman Tebbit, the Tory Party chairman, might have taken the decision as a result of backbench pressure; others appeared reluctant to accept that the talks were at an end and suggested the apparent breakdown was a tactical manoeuvre.

A senior GM spokesman said yesterday that the Government had changed the basis of the talks. "For the moment the whole thing has been aborted until something else happens," he said. "The Government withdrew the Land Rover

Anxiety in Italy over exports of lethal wine

By Our Rome Correspondent

ITALIAN OFFICIALS and leaders of the wine-making industry are deeply concerned after action taken against Italian wine exports to West Germany and France. The measures follow several deaths and cases of severe illness among Italians drinking wine with an illegally high chemical content.

West Germany has ordered checks on Italian wine made in the north-western region of Piedmont, one of the two regions suspected of being the source of the lethal wine, and has advised people not to drink certain Piedmont wine.

France meanwhile, has impounded three ships carrying wine in bulk from Apulia in south-east Italy.

In Italy, five people have died and about two dozen more are in hospital, some gravely ill, after drinking table wine bottled by the Piedmont family company of Vincenzo Oddo. It was discovered that the wines contained 5.7 per cent methyl alcohol, an additive which may not legally exceed 0.2 per cent for white wine and 0.5 per cent for red.

By injecting methyl alcohol, the winemakers are able to short-cut the production process and produce wine at very low cost. Consumers' associations in Italy have advised Italians not to buy wine costing less than L1,500 (£180) per litre because it is believed to be almost impossible to produce wine legally and make a profit at less than that retail price.

The Italian authorities are trying desperately to establish the original source of the lethal wine. The fact that the French authorities have seized a cargo of bulk wine from Apulia suggests that the adulteration of the wine may have occurred there rather than in Piedmont.

Australia accuses EEC of undermining dairy prices

BY WILLIAM DULLFORCE IN GENEVA

AUSTRALIA has accused the European Community of using secret subsidies on dairy exports to undermine Australian farmers' Asian markets. The subsidies, they say, could lead to a price war and to the collapse of the world dairy market.

The EEC action has forced the price of skimmed milk powder down by 25 per cent in a matter of days and brought prices for butter and butter-oil down to the minimum levels prescribed under the General Agreement on Tariffs and Trade (GATT), the Australians claim.

Their charges were made at a meeting of the Gatt dairy council last week. The council monitors the International Dairy Arrangement (IDA), a scheme aimed at setting minimum prices for dairy products on world markets.

The European Community has said that sale prices will not be allowed to fall below the Gatt minimum. Recently, however, it introduced a new "unpublished tender" system for dairy exports, under which the size of subsidy payments is not revealed.

The Australians claim that higher subsidies are encouraging sales at prices below the IDA minimum of \$1,000 a tonne for butter and \$1,200 a tonne for butter-oil.

They have no evidence that butter sales have actually taken place at prices below the minimum but claim that rumours of such sales are already destabilising the market.

The world price for skimmed milk powder, which had been strengthening, has tumbled since the Community's new scheme was introduced from a range of \$820-\$880 a tonne to \$600 and is fast approaching the IDA minimum of \$600, the Australians say.

Australian officials say the decision to raise the subsidies issue in the Gatt dairy council had been taken before the EEC recently announced the postponement of the annual ministerial talks with Australia. It was not intended to aggravate the already highly fractious relations between Brussels and Canberra.

The Australians are determined

to keep their markets, if necessary by following others' price cuts. Mr Alan Oxley, the Australian ambassador to Gatt, warned that the "collapse of the world dairy market" would not offer the EEC a cheap way of reducing the enormous surpluses of dairy products that its "inefficient practices" had created.

Butter stocks held by the EEC were estimated to be 1.2m tonnes in a report published by the Gatt secretariat in December. The Australians believe that Indonesia is one of the primary targets for what Mr Oxley labelled the EEC's "predatory subsidies".

The EEC first breached the IDA in 1984 when it sold 220,000 tonnes of butter to the Soviet Union below the agreed minimum price. The US then withdrew from the IDA. Last year the EEC was allowed, under the IDA, to sell a further 100,000 tonnes of ageing butter from its stocks to the Soviet Union, but it has apparently not been able to complete that deal with Moscow.

EEC farm price talks, Page 2

Table with contents listing various news items and page numbers.

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OVERSEAS NEWS

Israel trade deficit widens to \$179m in month

BY ANDREW WHITLEY IN TEL AVIV

ISRAEL'S adjusted foreign trade deficit widened dramatically in February to \$179m (\$177m), raising fears of a fresh balance of payments crisis if the trend continues unchecked.

This, at a time when the simultaneous decline of the dollar—to which the shekel is linked—and the price of crude oil should have helped the Israeli balance of payments enormously.

Their improvement, rising by 2.3 per cent. But imports — fuelled by an unexpected consumer boom — shot up by a disturbingly high 11.6 per cent.

Ershad clears way for Bangladesh elections

BY SAYED KAMALUDDIN IN DHAKA

BANGLADESH military President Lt Gen Hossain Mohammad Ershad yesterday cleared the way for parliamentary elections in May with the acceptance of resignation letters from 17 ministers in his 31-member Cabinet.

all ministers who would seek election first resign their posts and that the martial law administration be dismantled.

Egypt tries to revive peace process

By Tony Walker in Cairo

EGYPT CONTINUED efforts at the weekend to shift the stalled MIDDLE EAST peace process out of the rut into which it has fallen following the near-collapse of an accord between King Hussein of Jordan and Mr Yasser Arafat, chairman of the Palestine Liberation Organisation.

Sudan postpones elections in south

SUDANESE authorities announced yesterday that next month's elections will be postponed in 37 southern constituencies because of fighting between Government troops and rebels.

A resolution adopted at a joint meeting of the ruling transitional military council and the civilian Cabinet said ballotting would go ahead in 31 southern districts as well as in areas unaffected by the three-year-old rebellion.

Arson attack over Natal multi-racial plan

BY ANTHONY ROBINSON IN JOHANNESBURG

OPPOSITION OF long-mated plans to create a multi-racial administration in the South African province of Natal are believed to be behind two serious arson attacks which gutted both the home and the Natal University offices of Prof Lawrence Schlemmer, one of South Africa's most respected political scientists over the weekend.

Indaba is the Zulu word for a meeting of chiefs. It is also the word given to negotiations between the KwaZulu homeland Government and the white Natal administration aimed at forming a joint legislative authority, for the white, black and Indian fragments of this largely English-speaking province centred on Durban.

He also played the key role in preparing the Butheletzi Commission report of 1981, which argued in favour of a multi-racial government for Natal, only to be rejected by the Nationalist Government in Pretoria.

President P. W. Botha, is designed to give blacks a say in the formulation of legislation and policy "at the highest level." Thus far, there have been no takers for the offer which was made at the opening of parliament at the end of January.

Malaysian Prime Minister to visit troubled state

BY CHRIS SHERWELL IN KOTA KINABALU, SABAH

DR Mahathir Mohamad, Malaysia's Prime Minister, is to visit the country's troubled eastern state of Sabah today, 24 hours after police used tear gas to break up a mass protest led by one of his main political allies.

regain power "by any means possible" and said they had fabricated malicious allegations against his party "without regard for the frightful consequences of their actions."

S. Korean anti-government rally attracts 40,000

BY STEVEN B. BUTLER IN PUSAN

UP TO 40,000 demonstrators thronged into the streets of Pusan, South Korea's southern port city, shouting "down with dictatorship" in the largest outburst of anti-government protest since Mr Chun Doo-Iwan, the president, came to power in a military coup in 1980.

his oratorical skills in a passionate call for democracy and an end to "military dictatorship." Mr Kim was under extended house arrest in the early 1980s and was released from a political blacklist only last year.

Pakistan opposition holds anti-Zia rallies in Punjab

PAKISTAN'S opposition held big rallies in Punjab province yesterday to demand fresh national and provincial elections and to urge President Mohammed Zia-ul-Haq to quit office, opposition sources and witnesses reported. Reuter reports from Rawalpindi.

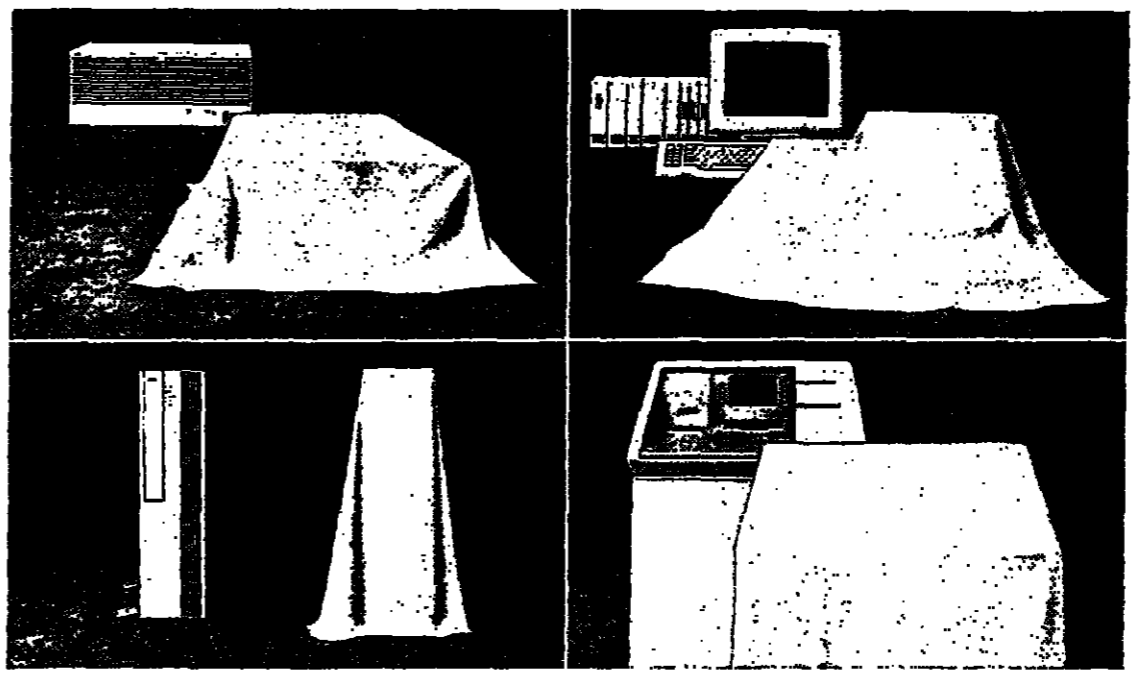
before he ended eight and a half years of martial law on December 30.

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Mr Arafat at the weekend also met Mr Marrack Goulding, UN under-secretary general for political affairs, who said that the gap between the US and PLO positions is "probably as narrow as it has ever been."

Nkomo calls for Matabeleland peace. Zimbabwean opposition leader, Mr Joshua Nkomo and one of his bitterest political rivals yesterday joined forces to urge residents of Matabeleland to help the Government bring peace to the troubled province. Reuter reports.

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OVERSEAS NEWS

Union Carbide agrees deal on Bhopal claims

BY WILLIAM HALL IN NEW YORK

UNION CARBIDE, the embattled US chemicals group, has reached a tentative settlement with the lawyers for the victims of the 1984 Bhopal gas leak in India. If the deal is ratified the company would pay \$350m (£233m) to settle the claims arising from the world's worst industrial disaster.

The settlement, which has yet to be agreed to by the US courts or the Indian Government, marks the first time that Union Carbide has indicated how much it would pay to settle the claims resulting from the leak at its

pesticide plant in December 1984. More than 2,000 people died and over 200,000 were injured after methyl isocyanate gas escaped from a storage tank. There has been widespread speculation on the size of the settlement and there had been reports that the Indian government was seeking up to \$1bn in damages to cover its costs for providing emergency aid as well as meeting the claims of the injured.

Union Carbide said that the \$350m paid over a period of time would produce a fund for

the victims of between \$500m and \$600m.

In a prepared statement yesterday it said that while it had agreed to go forward with a tentative settlement with the attorneys of private plaintiffs "before the settlement can be concluded, Union Carbide must be satisfied that the claims arising from the Bhopal incident can be resolved with finality." The Indian Government is not a party to the proposed settlement which was hammered out by attorneys representing Union Carbide and the private plaintiffs in front of Judge F.

Keenan in the US court of southern New York in Manhattan. In a bid to force both sides to negotiate and avoid lengthy litigation, the Judge has delayed making a decision on whether the trial should be held in New York or India.

The Indian Government, which has been pursuing a separate law suit on behalf of itself and all citizens of India who were killed or maimed by the Bhopal tragedy, is known to be anxious to have the case heard in the US courts because it believes the size of the award would be greater than if the

case was held in India. Union Carbide's lawyers are clearly hoping that the Indian Government will drop its claims and support the settlement which is designed to cover all claims against the company.

Union Carbide had \$532m of cash and liquid assets in its balance sheet at the end of 1985 and is thought to have had \$200m of liability insurance at the time of the accident. Wall Street analysts believe that it has sufficient funds to cover the proposed settlement without unduly harming the company's financial condition.

Brazil halts petrol substitution programme

By Robert Graham in Brasilia

THE Brazilian Government has frozen development of Proalcool, its costly programme involving the substitution of alcohol for petrol. No formal decision has been announced but Mr Joao Sayyad, Planning Minister, told the FT that the government envisaged a freeze on investment at least until 1989-90. Since the project's launch in 1975 nearly \$8bn (£3.3bn) had been invested.

Mr Sayyad said Brazil would not drop the programme altogether. "We will keep development frozen but we intend to retain the alcohol programme as a strategic asset."

Even before the slide in oil prices, Proalcool had become increasingly controversial. It was criticised for diverting economic development and for expense. Subsidies were costing almost half as much again as the investment.

The cost of producing by alcohol the energy equivalent of a barrel of oil varies from \$30 to \$45, depending on where the sugar cane is grown.

This compares with international oil prices of below \$15 and a maximum cost of domestic crude production from the Campos Basin of \$15. Nevertheless, through subsidies to promote alcohol the Brazilian consumer pays 65 per cent of the petrol price. Thus the public pays just over a third of the real production costs of alcohol.

The programme was developed in the wake of the 1973 oil price rises and before Brazil had discovered crude in substantial quantities offshore. Its expansion was spurred by generous incentives to sugar cane producers, distilleries and car manufacturers. Of last year's new car sales, \$90,000 ran on alcohol and only \$5,000 were petrol engines. Brazil now consumes the equivalent of 131,000 b/d of alcohol and 124,000 b/d of oil.

Proalcool employs 700,000 directly and 1m indirectly.

Moscow launches bid for observer status in Gatt

BY WILLIAM DULLFORCE IN GENEVA

THE SOVIET UNION is seeking observer status in the General Agreement on Tariffs and Trade, the Geneva-based organisation whose primary aim is to liberalise world trade. Mr Mikhail Pankin, the Soviet Foreign Trade Minister, announced here on Friday. The Soviet bid is apparently linked with the new round of multilateral trade negotiations due to be launched under the Gatt aegis in September. The round could have "global implications" which made it essential for all interested countries to be able to take part, Mr Pankin said.

Moscow's application is likely to be opposed by the US and the European Economic Community, both of which stated at the last meeting of the Gatt council that they would not allow more observers to be designated until consultations among Gatt members about the exact nature of observer status had been completed.

New members and observers have to be approved by consensus of Gatt's existing 90 members. It has been suggested that countries have been seeking

observer status to obtain insight into Gatt activities without any commitment to following its rules. This suspicion has been voiced in the case of the Soviet Union, whose officials have on several occasions over the past four years, raised the question of observer status with Gatt members and the Gatt secretariat.

Mr Pankin admitted yesterday that "some important countries" had not shown the political will to respond to Moscow's wish to become an observer. But the Soviet Union had been encouraged by the positive reaction of many other Gatt members, he said.

China already has observer status in Gatt and has announced that it will apply for full membership. Although China's announcement was received sympathetically by large Western countries, doubts have been expressed about how China's trading practices can be made compatible with Gatt free trade rules.

Four other East bloc countries - Czechoslovakia, Hungary, Poland and Romania - are already members of Gatt.

Occidental in Peru oil search pact

By Doreen Gillespie in Lima

OCCIDENTAL Petroleum Corporation has signed two new contracts with Peru in which it agrees to invest a minimum \$267.5m (£190m) in jungle oil exploration over the next six years.

The agreement, signed by the government despite strong opposition from the Marxist parties, is the Peruvian Government's first positive move towards foreign investment since it took office last July. The contracts replace those rescinded by President Alan Garcia in August last year, followed by the expropriation at the end of December of Peru's only other foreign oil producer, Belle Petroleum Corporation of New York.

Occidental is to undertake new drilling in the northern jungle where it already produces an average 80,000 barrels a day.

At the same time, it is to explore a new 1m hectare block in the central southern jungle. This is near the area where Royal Dutch Shell, exploring since 1982, made a gas find. The new contracts, while forcing Occidental to reinvest tax exemption approved by the previous Administration, also gives the company advantages it had long requested.

The former 50-50 production split has been replaced by a fee pegged to international oil prices for every barrel of oil produced.

Occidental had long requested a new jungle exploration area.

IADB ANNUAL MEETING

Concern over Latin America investment

BY PETER MONTAGNON IN SAN JOSE

THE CONTINUING stagnation of domestic investment in Latin America is now a matter of the greatest concern for the region, the Inter-American Development Bank warns in its annual report published today.

The report, which also discloses a sharp fall in the bank's own loan commitments to Latin America last year, says there has still been no significant recovery in investment spending which is running at 30 per cent below its peak of \$167bn (£119bn) reached in 1980.

Short-term austerity measures forced on Latin American governments by the debt crisis which started in 1982 must now give way to a more orderly economic policy based on

assured investment and financing, it says.

A shortage of local investment in development projects was one of the main reasons behind the fall of nearly \$900m - \$3,06bn in the bank's loan commitments to Latin America last year.

Like the World Bank before it, the Inter-American Development Bank has thus had to reveal a contraction in its own support for developing countries at a time when they are facing deep payments crisis and falling living standards.

Moreover, its annual meeting, which opens here today, is likely to see fierce debate over the size of the bank's net capital increase. This will deter-

mine the amount it can lend between 1987 and 1990.

In initial talks here this weekend, the US has made plain that its support for a capital increase is dependent on the Inter-American Development Bank switching to greater emphasis on programme lending with tough policy conditions attached, in line with the so-called Baker plan for easing the debt crisis.

One senior Latin American delegate said this was "a great shock for the bank" which has traditionally concentrated on lending specific projects and shunned involvement in economic policy-making in member-countries.

However, the US delegation, which unusually, is led by a

relatively low-ranking official in the form of Mr James Conrow, deputy Assistant Treasury Secretary, is proving tough in its demands.

One condition it is seeking in return for supporting a capital increase is a change in board voting rules raising the majority required to approve individual loans to 60 from 50 per cent.

This would give the US an effective veto right, as it holds 34.5 per cent of the bank's shares.

The question of a capital increase is becoming urgent as the bank's present lending authority runs out at the end of this year. But there seems little chance of an agreement at this week's meeting.

Mexico to hold talks with bank creditors

BY PETER MONTAGNON

MEXICO will hold informal talks with its main bank creditors at the Inter-American Development Bank annual meeting which opens in San Jose, Costa Rica, today, but it is still not ready to make any formal requests for loans to cover financing needs for 1986, senior officials said.

Among factors that have to be decided first is the amount of money Mexico can expect to receive from non-bank sources including governments, the World Bank, the International Monetary Fund and the Inter-American Development Bank. Mexico has already said its

total requirement for 1986 is around \$4.2bn to \$6bn, but the officials said that even this figure fluctuates from day to day depending on movements in the oil market.

As a result, it has been unable as yet to formulate a full financing programme, though in background comments over the weekend they reaffirmed their determination to seek relief on creditors, as part of this year's package.

This would be one means of avoiding the need to obtain Congressional authorization for a further increase in the foreign borrowing limit which has

already been set at \$4bn for 1986.

Such a request could run into difficulties as there is growing opposition within Mexico to the idea of running up yet more debt just to offset the fall in oil prices.

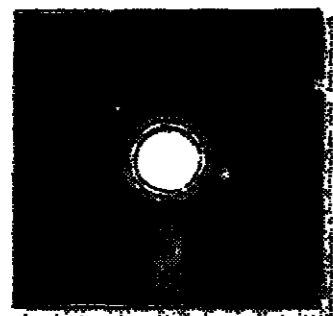
The delay in putting this year's financing request to bank creditors means that a principal repayment of \$950m which falls due at the end of this month will almost certainly have to be deferred again temporarily.

This will happen pending a decision on whether it should be consolidated into this year's overall requirement.

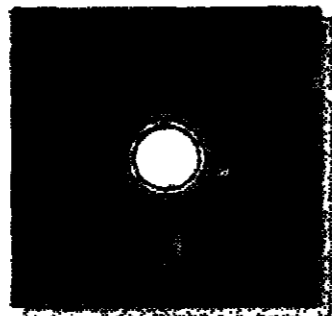
However, despite widespread rumours that its reserves are running low, the officials said Mexico has no present need for bridging finance.

One official said negotiations with the International Monetary Fund on an economic programme for 1986 - a key element in this year's package - should be complete "within a matter of weeks."

Agreement with the IMF has already been reached on exchange rate and interest rate policy, leaving only the size of the budget deficit to be decided.



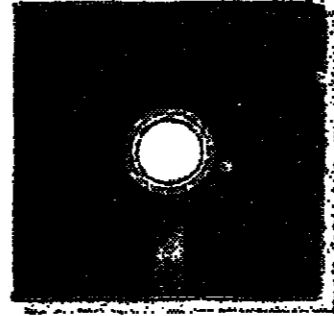
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WORLD TRADE NEWS

David Marsh looks at the commercial side of nuclear conflict  
UK exporters enter the lion's den

A GRISLY exhibition of heavy-duty tank coverings, wristwatch-style radiation metres and flame-retardant nylon smocks last week at the British embassy in Paris underlined the commercial side of the West's efforts to prepare for nuclear and chemical warfare.

The show, held on by the UK Defence Ministry's Defence Export Services Organisation and paid for by eight participating British companies, represented the biggest effort so far by the UK to step up exports in a gloriously specialised field of military equipment.

The two-day event visited by a stream of top-level French military officials and defence companies attracted a higher attendance than expected.

"We're going into the lion's den," said a top British official, emphasising that the French market for military equipment has traditionally been one of the hardest for British companies to enter.

"We're here to get exposure," was the most frequent comment from the companies displaying wares ranging from radiation and toxic gas detectors to equipment enabling fighter pilots to shake their thirst without harm while flying through fall-out.

The display of defences against nuclear, biological or chemical (NBC) weapons illustrates the seriousness with which British forces—although not, of course, the civilian in the cellar—have already peered themselves towards the possibility of this type of warfare.

Many of the companies taking part already have their goods in place with armies on the Continent, either through direct sales or, more frequently, through contracts with the US and Britain whose forces are stationed in West Germany.

Greentech Polymer Coatings, for instance, a subsidiary of the BTR group, featured rubberised impermeable covers for West German Leopard tanks and

personnel carriers.

The company also provides fabric which is made up into mobile hospitals offering 48 hours' NBC resistance for British forces. "The Germans are most forward in protective ideas," said a Greentech salesman.

Now that the French military have abandoned the idea of banking on Germany as a buffer against Soviet attack, France has been taking the great of chemical warfare much more seriously.

The Lewisham-based Fisher Controls company, which has sold to the UK Defence Ministry 2,500 mobile radiation meters and 250,000 dosimeter lockets that can be strapped to soldiers' wrists, sold an initial batch costing about £3,000 each — to France a few years ago.

Apparent inability of the French military to develop a comparable home-made version of the Fisher products has spurred the company's hopes of

winning a much larger order to bring the equipment into operation with French forces.

Graseby, part of the Cambridge Electronic Industries group, was displaying a portable hand-held instrument for monitoring the presence of nerve and blistering gases.

The company has won an order from the US Defence Department and has units starting trials in Spain. But winning orders from France will be difficult, said Mr Colin Wainwright, military sales manager.

Bonding was showing gun-absorbing charcoal laminates which, combined with Courtauld fibres designed to give protection from nuclear flash, are made up into clothing for the British forces.

Norman-Garrett, a Yeovil-based company owned 52 per cent by Westland Helicopters, is at the "firm inquiry" stage of selling its NBC filtration units to Saudi Arabia.

Mitsubishi in China power deal

A CONSORTIUM comprising Mitsubishi Heavy Industries, Mitsubishi Electric Corporation and Mitsubishi Corporation has signed a contract to sell four coal-fired generating units to two Chinese power stations, Reuter reports from Peking.

The group signed the contract at the weekend with the Hunan International Power Development Corporation of China. It will supply two units each to the stations in Dalian and Fuzhou.

An official of the Import-Export Bank of Japan said the value of the contract was \$378m (£264m).

The bank lent the consortium \$220m to lend to Hunan at 8.5 per cent interest over ten years, the official said.

Three credit packages totalling \$792m are being formed to fund Chinese coal-fired power plants, Hong Kong bankers said.

Negotiations for a further \$150m in combined Canadian and US export credits for Hunan are moving ahead, and syndication of a \$427m credit for Hopewell Power (China) Ltd had begun.

The Hunan deal is in three parts, arranged and managed by Chase Manhattan Asia and China Development Finance Company (HK) (CDF), a Bank of China subsidiary.

Hong Kong rejects Washington calls for new textile curbs

BY DAVID DODWELL IN HONG KONG

THE HONG KONG Government has rejected US calls for new restraints on the export of textiles and garments to the American market.

Mr Hamish MacLeod, Hong Kong's Director of Trade, had held two days of talks with a US textile delegation headed by Mr Charles Carlisle, the chief US trade negotiator.

Mr MacLeod said after the talks that Hong Kong could not accept proposals for garment exports to be pegged for three years at 1985 levels, nor for garments not at present subject to quota to come under restraint.

Hong Kong's bilateral textile agreement with the US does not expire until the end of 1987. The call by the US Administration for early re-negotiation comes as major textile exporters make final preparations for negotiation of a new Multi-Fibre Arrangement (MFA). The existing agreement expires in July.

At the end of the talks, Mr MacLeod queried the rationale for selecting Hong Kong for special restrictive treatment.

About 95 per cent of Hong Kong's apparel exports are already subject to quota limits, he said.

The US demands, seen as a response to protectionist pressures there, were incompatible with the progressive liberalisation in textiles trade being

sought in the MFA negotiations, and incompatible with the existing bilateral agreement, he added.

Mr Carlisle, who noted that similar talks have been convened with other major textile exporters, said that the US Administration was asking for the co-operation of Hong Kong and other major suppliers to ensure the continuation of an orderly trading system from which all can benefit.

He complained of "serious problems" caused by the recent rapid increase in textile imports to the US.

He noted that Hong Kong sold 49 per cent of its textile exports to the US, worth about HK\$25bn (£2.3bn) in 1985, and alone accounted for 18 per cent of all textile and apparel imports into the US.

There was concern to meet the demands of small and poor developing countries that are trying to raise their exports to the US. Major Asian textile exporters have, however, seen the US move as a "dividend" and "rule" by ahead of the Geneva MFA talks in July.

The southern Chinese province of Guangdong has set up an international trading group with subsidiaries in the US, Japan and Australia, intended to build direct trading links with importers overseas. The province wants to break the

stranglehold Hong Kong traders have over a large share of the province's fast-growing foreign trade.

The trading group, called the Guangdong Overseas Economic and Trade Corporation, has opened separate subsidiaries operating in New York, San Francisco and Sydney, and is negotiating a new subsidiary in Bangkok.

According to Zheng Le, deputy director of Guangdong's Foreign Economic Relations and Trade Bureau, the corporation is intended to improve awareness inside China of the sorts of products in demand in foreign markets, and quality standards expected of exported goods. It is also expected to lay the foundations of an international marketing network for Guangdong goods.

Until recently, Peking-based trading corporations had a monopoly over China's foreign trade. As the economy has begun to open up, with export promotion being given strong political backing, so this monopoly has been broken down.

A large number of provinces have begun to trade directly with Hong Kong, using the enclave as a springboard for trade promotion, but Guangdong's move is understood to be the first by a provincial authority to forge links with major trading partners.

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SHIPPING REPORT  
Opec price talks brighten tanker market outlook

FINANCIAL TIMES REPORTER

OIL PRICE and production negotiations among Organisation of Petroleum Exporting Countries' ministers helped brighten the tanker market last week. Business was brisk and rates strengthened, even though the talks proved inconclusive.

Shipbrokers E. A. Gibson said that since the oil producers' ultimate aim was to raise prices, probably through restrictions on output, both buyers and sellers seemed eager to move oil cargoes while production remained high and prices were low.

Galbraith's also reported tanker findings continuing rapidly except for owners of very large crude carriers (VLCCs) looking for business in the Middle East.

Demand for vessels of this size was virtually non-existent, the company said, with most interest focused on 125,000-tonners.

It added that if Opec were to agree on oil production limits, VLCCs would probably find it even harder to find regular business while the smaller vessels would benefit further since charterers would be able to obtain only smaller parcels.

Despite the activity in most markets, few owners were prepared to venture too far north in the Gulf, where there had been an increase in reports of tankers being damaged in the conflict between Iran and Iraq. Insurance rates are expected to go up soon.

E. A. Gibson reported that the North Sea was still the most active market with a considerable number of vessels winning business at remunerative rates. Rates of Worldscale 75 and 80 have been paid for 80,000-tonners on "local" business around the UK and the Continent.

For the longer trips to the US, rates had been around Worldscale 57.5 for 65,000 tons.

US steel import fine

A WEST GERMAN steel company has pleaded guilty and agreed to pay a \$3m (£2.1m) fine for importing Romanian steel into the US at artificially inflated prices, AP reports from New Orleans.

US authorities announced that Otto Wolf Handelsgesellschaft entered a corporate plea of guilty to one count of knowingly making a false statement on the government form completed by the company before it brought 3,077 tonnes

World Economic Indicators

	UNEMPLOYMENT				
		Feb '86	Jan '86	Dec '85	Feb '85
UK	000s	3,382	3,408	3,273	3,324
	%	14.0	14.1	13.5	13.7
USA	000s	8,527	7,831	8,023	8,295
	%	7.3	6.7	6.9	7.3
W Germany	000s	2,590.3	2,347.1	2,310.7	2,619.4
	%	9.6	8.7	8.2	9.7
France	000s	2,493.9	2,436.3	2,495.1	2,541.9
	%	10.7	10.5	10.8	11.0
Italy	000s	3,133.2	3,076.1	3,052.4	2,954.6
	%	13.7	13.6	13.5	13.1
Netherlands	000s	768.0	749.5	741.8	804.2
	%	12.6	12.4	12.2	14.3
Belgium	000s	540.4	542.4	541.1	619.4
	%	13.1	13.2	13.1	15.0
		Dec '85	Nov '85	Oct '85	Dec '84
Japan	000s	1,540.0	1,590.0	1,590.0	1,420.0
	%	2.9	2.9	2.8	2.6

Source (except UK, US, Japan): Eurostat

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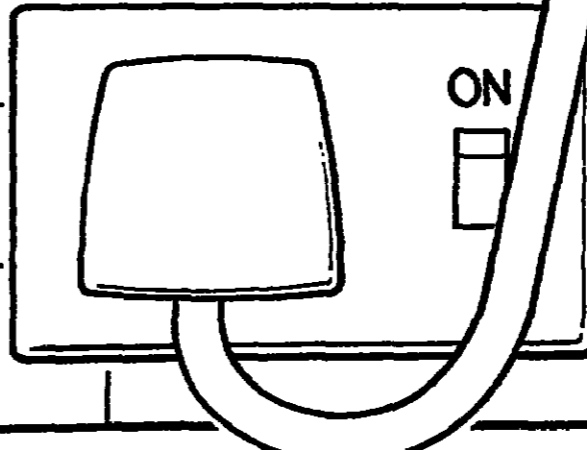
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# What's Smarter? Owning Hotels Where People Want To Stay Or Where They Have To Stay?

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*"Welcome to Hornchurch, Sir."*

UK NEWS

Ministers ready to bid for higher spending

BY PETER RIDGELL, POLITICAL EDITOR
CABINET MINISTERS in charge of spending programmes are prepared to challenge the Treasury by putting forward bids for substantial additional expenditure in the run up to the next general election...

Thatcher 'kept to the rules' on shares

By Margaret van Hattem
REPORTS that Mrs Margaret Thatcher, the Prime Minister, had been trading in shares in her own name in contravention of established conventions were strongly denied by her office at 10 Downing Street yesterday...

The offer General Motors had to refuse

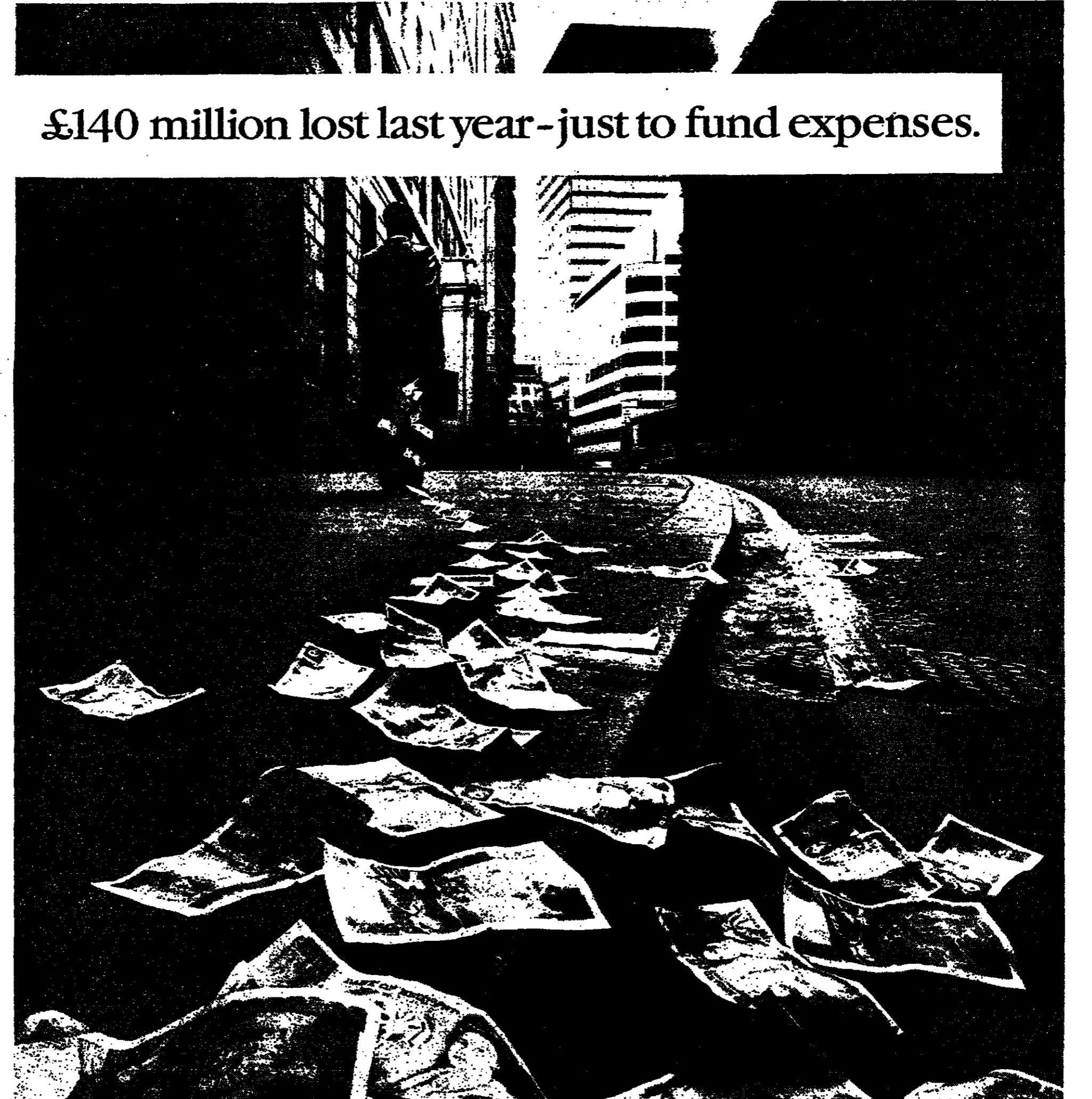
Kenneth Gooding charts the collapse of negotiations to buy Land Rover-Leyland
AFTER the collapse of negotiations for the purchase of state-owned BL's Land Rover-Leyland commercial vehicle operations between the UK Government and General Motors...

Ford of Europe quickly withdrew and is in the process of finalising a different solution to its heavy truck problems: a merger with Iveco, Fiat of Italy's heavy commercial vehicle subsidiary...



Mr Paul Channon: Stormed out of the discussions

treated equally, this seemed far from the case. On Thursday, March 13, the Government began a series of long negotiations with GM - one session lasting 20 hours - in the search for a compromise over Land Rover...



£140 million lost last year - just to fund expenses.

Pickets stand firm by the Fortress

BY HELEN HAGUE
OUTSIDE 'Fortress Wapping' on Saturday night, a clump of dismissed Sun newspaper compositors chanted a telling variant of the striking miners' 'Here We Go' anthem...

Call for privatisation in the Third World

A RADICAL overhaul of Britain's overseas aid programmes aimed at encouraging privatisation in the developing world is urged in a report today, Michael Prowse writes...

Introduce the American Express Corporate Card System. It's a sobering thought, but at any given moment last year, no less than £1,080 million\* of British companies' money was in employees' hands as cash advances for travel and entertainment expenses...

UK NEWS

CALL FOR LIFTING OF LEGAL RESTRICTIONS ON INDUSTRIAL ACTION

Labour presses for right to strike

By David Thomas, Labour Staff

THE LABOUR PARTY is calling for the removal of all legal restrictions on the right to strike in a paper to be considered at today's meeting of the Trades Union Congress (TUC) - Labour Party liaison committee.

The Labour Party has drawn up a discussion paper on the right to strike as part of the exercise now under way in the labour movement of considering legislation to replace the Conservative Party trade union laws.

The paper says: "We need to provide a right to take industrial action irrespective of its purpose, and to protect it against all forms of legal liability."

present London newspaper dispute - should be automatically unfair before an industrial tribunal.

Rail buffs open fight to defend their shrine

By David Brindley

THE GRAMMAR school at Appleby, the isolated Cumbrian town in north-west England more usually noted for its annual gypsy horse fair, today hosts the first of a month-long series of public hearings on a plan that strikes dread in the hearts of locals, railway buffs and incurable romantics alike.

'Worse deal' for workers in privatisation

By Our Labour Staff

PRIVATISATION opens up "better pay, conditions and employment opportunities for the employees." So said Mr John Moore, Financial Secretary to the Treasury, in one of his many speeches on privatisation.

in the words of the late Mr Eric Treacey, the "railway bishop" of Wakefield, the "spectacularly beautiful line runs with York Minster and Hadrian's Wall as one of the three wonders of northern England. Even BR itself has billed it as "England's greatest historical scenic route."

Family chickenfeed processor tops Britain's growth register

By William Dawkins

THE south Yorkshire-based Prosper de Mulder might be Britain's largest maker of ingredients for poultry feed, but chickenfeed is certainly not an apt word for its profits.

The report, the Growth Companies Register 1986, lists financial and management details of Britain's 1,000 fastest expanding private businesses. Compiled from the latest filed accounts of 80,000 companies on the database of ICC Information Group, the register includes businesses making more than £50,000 which have kept profits growing throughout the past three years.

Britain's unquoted stars are more or less equally shared between distribution and manufacturing industries, accounting for 593 and 497 of the top performers respectively.

New support to end Europe's protected national markets

By Paul Cheeseright in Brussels

THE European Court of Justice may achieve for the British insurance industry what a decade of official diplomacy has failed to obtain. That is, an opening of protected national markets in the European Community.

Such a prediction became possible after the court last week heard the opinion of Sir Gordon Slynn, the Advocate-General, that regulations in Denmark, France, Germany and Ireland breached the provisions of the Treaty of Rome, fount of Community law.

systems or creating a Community system which overrides national regulations. It would create an impetus towards reaching one of the objectives in the Community programme to achieve an internal market without barriers by 1992. The court would be demanding, in effect, that the Community complete its legislation in the non-life insurance sector.

Some former British Rail hotels have refused to honour redundancy and sick pay agreements, the TUC claims, while bidders for British Shipbuilders yards are not prepared to continue the industry's redundancy scheme.

Objectors want a forum at which they can question the very basis of BR's closure case, arguing that the line has been systematically starved of investment and traffic, that revenue is now more than covering operating costs and growing faster than any other route in BR's provincial sector, and that the Settle-Carlisle is vital diversionary route for the east and west-coast Scottish lines.

JAMAICA advertisement with tropical imagery and text: "The temperature in Surrey today is 82° F"

Hand Delivery Service advertisement: "BASEL/GENEVA/LAUSANNE LUGANO/ZURICH"

BIRMINGHAM THE QUICKEST WAY TO THE OFFICE advertisement with logo and contact information

NEW NATIONWIDE RATES FROM APRIL 1ST 1986 advertisement with table of interest rates

CAMDEN MOTOR RENTALS LTD advertisement with logo and contact info

BCC announces that from 24th March 1986 its base rate is changed from 12 1/2% to 11 1/2% p.a. advertisement

DELTA'S BUSINESS CLASS TO THE U.S.A. advertisement with large text and Delta logo



# THE MANAGEMENT PAGE

EDITED BY CHRISTOPHER LORENZ

AT 7 am on most weekdays Philip White leaves his home in the Cheshire industrial town of Warrington and points his company car down the motorway towards Manchester.

Within 45 minutes the Ford Granada is parked alongside Mono Pumps' factory in the red brick east Manchester suburb of Audenshaw and its general works manager is already on the shopfloor.

The car drive and early morning walk among the men and machines that engineer the site's yearly production of 20,000 industrial pumps are reassuring routines in a business where nothing stands still for very long.

The demands of the modern industrial manager, the subject of scores of glib reports from the pens of management consultants, come alive every morning on the 11-acre site of Mono and at other honest engineering ventures like it.

As a busy manager at Britain's industrial coalface White has been at the eye of a whirlwind for more than half a decade. Like many of this unending breed who typically earn a relatively modest £30,000 to £25,000 a year, change, recession and competition make the business of earning a living particularly stressful. White and his colleagues shoulder a breadth of responsibilities that would send many managers in search of prescribed tranquillisers.

At 43 White has worked in industry since leaving school in Widnes but has witnessed nothing like the past six years. Having been a £3 a week technical apprentice at an English Electric (GEC) locomotive plant, becoming an assistant works manager there at the age of 28, change usually arrived in a trickle. Since 1980 it has been a deluge.

With the assistance of colleagues he has taken responsibility for instituting three bouts of redundancies, cutting the workforce in half to 450 people. He is the company's principal wage negotiator and experienced the 1981 talks slipping into a difficult one-month strike. He has been the main motivator in a wholesale reorganisation of production, leaving only one of the site's 150 machines in the same place it occupied before reorganisation started. It is his job to put to the board the firm's annual investment and re-tooling programme.

Fronting the role of new broom sweeping away the plant's old culture has also fallen to him. Stripping away the hierarchy of canteens, moving towards single status for staff and blue collar workers, installing "clocking on" on a computerised data system for all employees, introducing shift



Philip White: "I enjoy my job but I can't imagine situations being much tougher" Mike Aron

## Eye of a whirlwind

In the first of an occasional series, Nick Garnett talks to a senior executive of the UK engineering company, Mono Pumps

changes in the stores, engineering and rubber shops and bringing in greater labour flexibility have all started as jottings on the desk pad in his rather bare functional office. Its walls are relieved only by aerial photos of the site. All that is in addition to White's basic managerial responsibility for getting deliveries out on time in an industry where the once cosy relationships between producers and their markets have crumbled.

"Stressful situations come thick and fast. I enjoy my job but I can't imagine situations being much tougher," he says. "A manager in manufacturing, especially on the production side, is going to be under pressure and that is unremitting because every week, every month there is going to be a need to address problems associated with getting production through and on time."

No one can do these jobs on their own and White has a managing director above him on site and six managers under him responsible for individual departments and working areas. But White works in a world where you have to be conversant with such machine tools as the latest Yamazaki turning centres while feeling the pulse of the plant and ensuring that the Coal Board, regional water authorities and all the other customers get what they want day in, day out. As a board director, White carries the can if anything goes seriously wrong within Mono's

trial relations for the local association of the Engineering Employers' Federation. Six former employees are claiming unfair selection in the company's redundancy programme and the company's position has to be defended by White at an industrial tribunal.

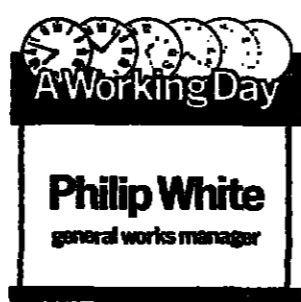
After lunch White was locked in talks with the plant convenor and shop stewards chairman; apprentice training and overtime in the packing department was on the agenda.

Fridays are often rounded off with a meeting on the company's capital programme; the burning issue of the moment centred on a £200,000 automated steel bar store and sawing facility and the need to change the supply of bar. But there was no time for that.

The past few years have materially affected some of White's views. The shopfloor has shown more flexibility than he once thought possible. Much less convinced now about the response of an estate agent to Mono's request to buy a piece of land, White must prepare a report on the negotiations for the board meeting the following Monday. The other urgent issue was the preparation of a new set of production monitoring measures by the end of the shift.

By late morning White was chairing a production meeting with his own managers and the company's principal subcontractor, a letter from the managing director seeking assurances from White that he can meet output targets uppermost in his mind.

Next Mono's general works manager was straight into a briefing with the head of indus-



ing cocktail cabinet, just 33 days holiday including statutory breaks, a maximum of 45 minutes for lunch and subsidised food in the canteen. Salaries are not as good as higher prestige careers or the services. It's disappointing when manufacturing is not seen as important to us as a nation.

"Where the Tories have done a good job is in bringing home the realities of the competitive world. But the decline of manufacturing on such a large scale is very worrying to me and that's been a hell of a price to pay. What I'm not sure of was whether that was necessary to get realism. I think some of their policies have put many good companies to the wall and I can't detect anything they are doing to help a company like this increase its business."

Nor is White sure whether the quality of the British manager is improving. "Do you know I just don't know. We are lucky we have a good team here. I have a feeling that other manufacturers are not addressing the problem with the same sort of enthusiasm. I am trying to give deliveries now to the customer which are better than the deliveries I'm getting from suppliers. That can't be right."

White pays tribute to the workforce and the AUEW whose convenor he tries to see at least once a week. He is all too aware though of the late starting and long boozy lunches still endemic in some sectors of business, though not so much in manufacturing. "I think 'disgust' is too strong a word for my feelings about that but I just don't see how you can operate in that manner. If you come in late in the morning at nine or ten o'clock how can you expect to maintain discipline and enthusiasm of subordinates and those on the shop floor?"

There is no let-up on the cards for White and his fellow managers. Manufacturing of pumps has become increasingly competitive as the old system in which individual companies treated their markets as virtual fiefdoms disintegrates. For the so-called positive displacement progressive cavity pumps made at Audenshaw competitors like Netsch, PCM and Seepex claw for business. The big pump maker Worthington Simpson has just entered the same market which is already under attack from different technology like air operated diaphragm pumps. At least Audenshaw is comforted by being part of the Mono group, a Gallaher subsidiary.

Will White's son, now doing his A-levels, provide some family continuity in manufacturing? It does not seem likely. "I'm encouraging him to be an accountant," says White.

## Annual hours

# A yearly rate for the job

David Thomas explains a new approach to working time

ALMOST unnoticed, some companies are abolishing overtime. They are doing so as part of a radical overhaul of their working time, known as "annual hours."

The annual hours approach means that working time is fixed by the year (for instance, 2,250 hours) rather than by the week (for instance, 39 hours). Typically, the annual hours approach means that working time is split into two parts: the larger chunk which is worked in set shifts; and a smaller part which is worked at management's discretion, subject to certain limitations, to cover tasks normally done by overtime.

In effect, the functions covered by overtime are built into a standard working contract. This often involves higher basic pay.

In having to think through this complete reformulation of their employees' attendance at work, managers have been able to tackle a range of issues that have been bothering them. Some of these emerged at a seminar on annual hours recently organised by the Industrial Society and attended by managers from more than 30 companies.

In a joint presentation, Gerry Woodcock, personnel manager, and Bill Patterson, shop stewards' chairman, explained the pressures which led to the introduction of annual hours by Thames Board, a Unilever subsidiary, into its Workington plant.

The unions started pushing for reduced working time and we were aware that our competitors in Scandinavia were cutting their working hours," Woodcock explained.

This was particularly problematic in an industry like paper and board which needs a fixed shift system to ensure the continuous working essential to it. Bill Patterson took up the story: "Our members were starting to press for a big increase in basic pay. Because people couldn't live on basic pay, they were depending on overtime."

Woodcock for Thames Board added that because of this the company was vulnerable to any bar on overtime, which was running at more than 20 per cent of basic hours.

The company reckoned that tinkering at the edges would not deal with such problems.

It decided on a complete rethink of its working time, aimed at achieving several objectives, including a minimum dependence on overtime, the resolution of grading and differential problems and a reduction in the number of days on which the plant was completely stopped because of holidays.

Management and union representatives toured some of the company's competitors in Europe to see what happened there. The Scandinavian paper industry has pioneered annual hours and Patterson recalls that one of the conversations which swung the two sides around to this approach took place in a sauna in a Finnish forest: "There is no greater leveler between management and union than seeing each other with no clothes on," he says.

manual workers. Blue Circle was able to tell the Industrial Society conference that it had abolished the traditional notion of overtime by dividing its workers' 2,251 annual hours into 2,028 rostered hours and 223 flexible hours worked at management's discretion within certain limitations. Blue Circle is already finding that its employees are completing some tasks up to 50 per cent faster now that their payment does not depend on their length of attendance at work.

The idea of annual hours was introduced into Britain by the paper and board industry on the basis of Scandinavian experience. An agreement was signed between the Paper and Board Industry Federation (PBIF) and the unions in the industry in 1982 which provided a framework for mills wanting to introduce annual hours.

The PBIF reckons that about 16 mills now operate the system, though the number is increasing consistently. The Industrial Society, which is monitoring the spread of the idea, knows of about 25 companies which are trying annual hours, including some in the paper, concrete, glass, can, chemicals, oil, textiles and pet food industries.

Interest so far has been greatest in continuous process industries, though the Industrial Society believes that companies in engineering and in distribution are beginning to wake up to the idea. Most companies too have introduced annual hours only for their manual workers, leaving their collar staff unaffected.

But Philip Lynch, a consultant who has specialised in advising companies on the introduction of annual hours, told the Industrial Society conference that all companies are being affected by the pressures which have led some down this path—pressures like cuts in working time, moves towards staff status among manual workers, the need to cut overtime and trends towards greater labour flexibility.

Lynch said: "Annual hours has been associated with continuous process, shift working industries, where rosters have to be fixed a year in advance. In my view, the concept has more potential in industries where greater variation in rosters is possible."

## Flexible

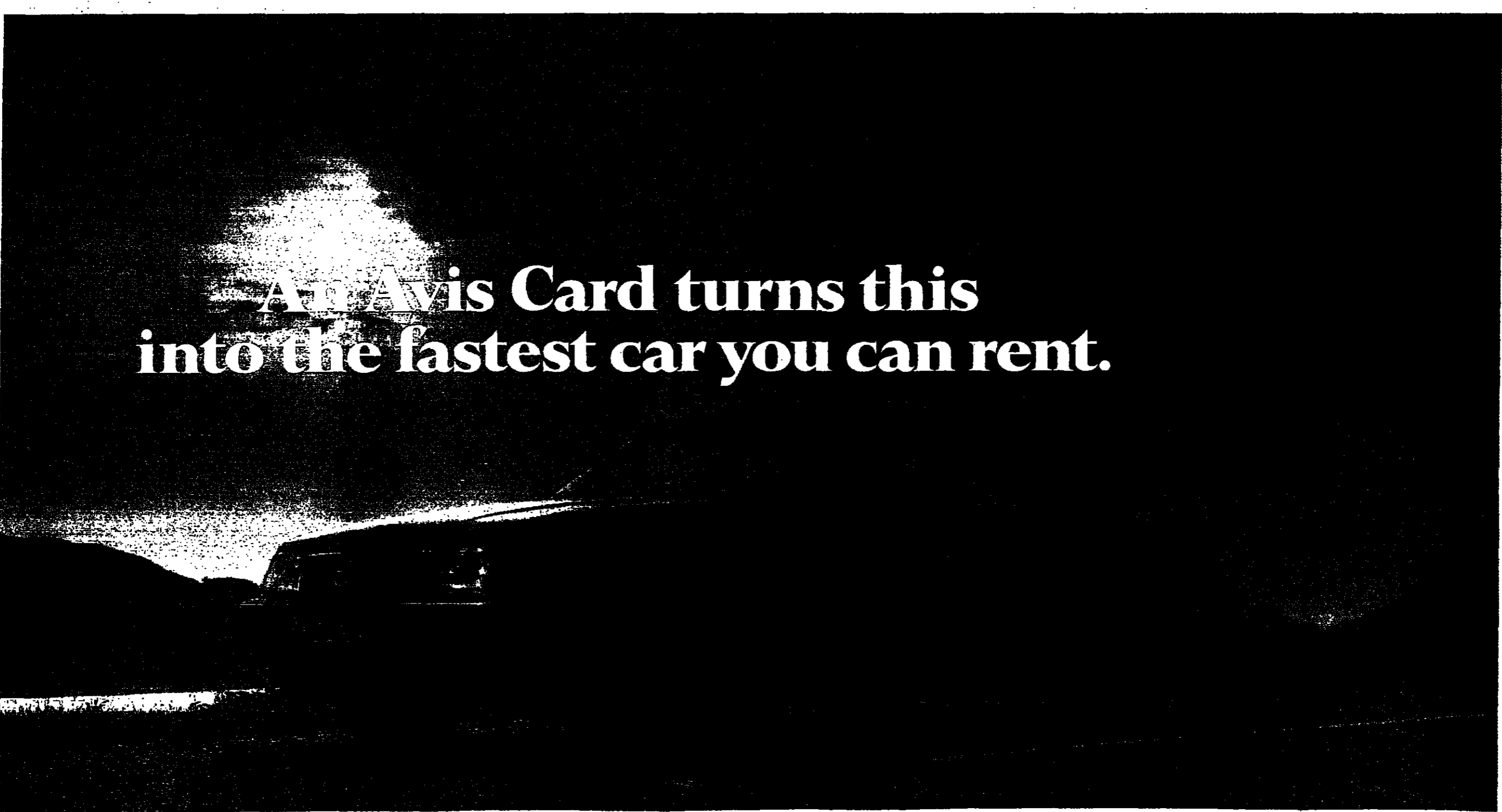
The Thames Board annual hours system involves calculating the number of hours each employee would work in a year, assuming a 39-hour week. After deducting the number of hours an employee works on regular shifts, a reservoir of flexible hours is left over, on which management can draw in order to do things—like covering for absent workers—which would previously have been done on overtime.

At the end of the long and difficult negotiations to introduce this system, both sides had won a number of benefits.

The company had considerably reduced its overtime. It had achieved a more intensive utilisation of its plant. And it had done it at no extra cost.

The union had won a cut in the standard working week (down from 41 hours to 39 hours), a payment to cover the reduction in overtime; and a long break (10 days off in every five weeks) built into the new shift system.

Each company which has tried annual hours has given it a slightly different emphasis. Blue Circle Industries, the cement manufacturer, which has recently introduced the idea into two of its works, has used the change to do away with traditional job descriptions for its manual workers, to increase labour flexibility and to move towards salaried status for its



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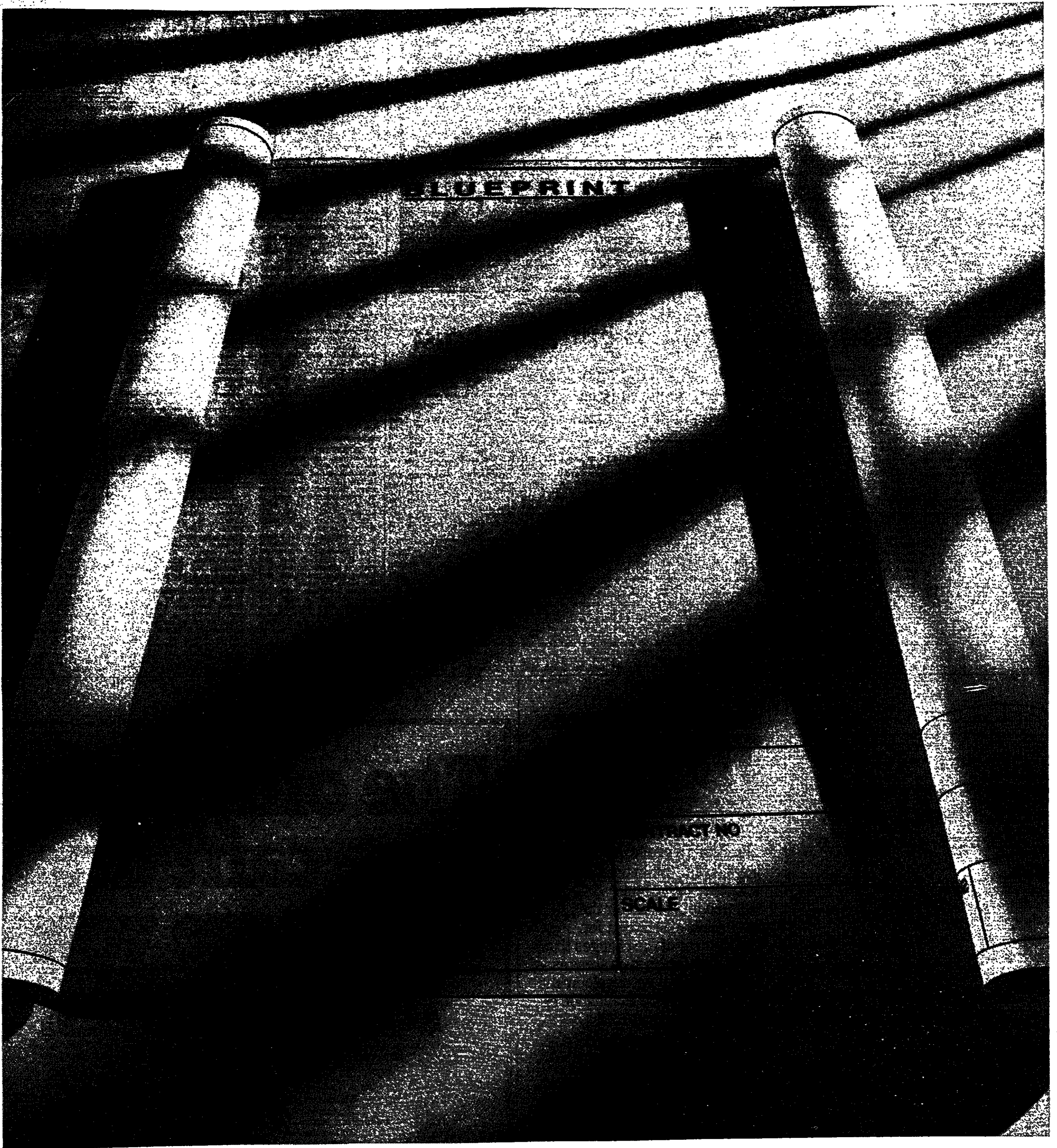
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TECHNOLOGY

THANKS to Opec, the strange and rather beautiful propeller shown here is set to become the hall mark of the commercial aircraft of the next decade.

The rise in the price of oil prompted Nasa in 1975 to ask Hamilton Standard, the US propeller manufacturer, to develop such a design with the aim of combining the efficiency of the turbo-prop with the speed of the jet engine. Today the oil price is falling, but the concept of this "propfan" has caught on and has a momentum of collaborative projects behind it that will take some stopping.

The laws of physics dictate that a propeller engine, which throws a large mass of air backwards relatively slowly, uses less power for a given amount of thrust than a jet engine throwing a small quantity backwards at high speed.

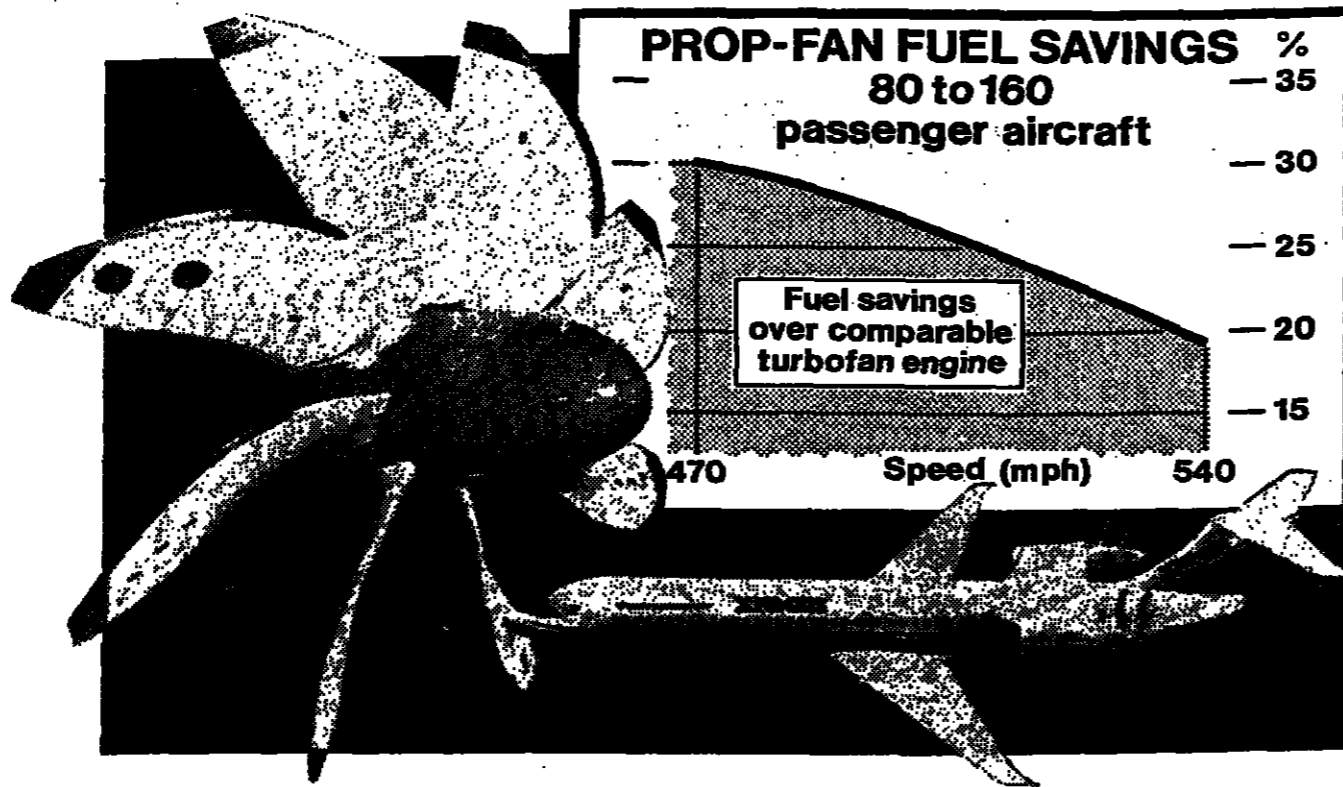
Over the last 30 years the evolution of the jet engine has been dominated by the need to give it this virtue of efficiency. The engines have become wider and wider, and more and more reminiscent of a propeller operating in a duct. Today's fanjet blows six times as much air slowly through its tub-like outer duct as it draws through the engine itself.

At a by-pass ratio of much more than eight-to-one, a duct adds a counterproductive amount of weight and drag to the engine. But the leap to the "ducted fan," or propfan, with its bypass ratio of between 35 and 50, raises to key problem that has long confined the propeller to slower types of aircraft. A propeller's efficiency falls abruptly when the tips of its blades move at more than the speed of sound, or 680 mph, and this is inevitable in an aircraft moving forwards at 600 mph.

The solution—the secret of the propfan—lies in the elegant shape of its blades. Because they are swept, their leading edges slice into the air and thus advance through it at less than their true speed of movement.

The sweep becomes more pronounced as the radius, and hence the speed, increases and this yields the shape of a scalar. Provides the blades are swept in this way, and are very thin, they can generate thrust efficiently with the tips moving at Mach 1.2, or 820 mph. This is consistent with an aircraft speed of 550 mph or more.

The idea of sweep in propeller blades is not new but it has taken computer analysis and advances in material science to make it workable. The curve of the blades leads to complex twisting stresses within them, not encountered in a traditional propeller (imagine clamping the handle of an ice hockey stick horizontally in a vice and



Elegance is key to cut and thrust

Nicholas Colchester reports on the engine which is set to revolutionise air travel

then standing on the end of the blade). The scimitars have to be designed not to flutter. They have to be formidably stiff.

The absence of a duct has two other important consequences. It means there is no shroud filled with noise absorbing material to reduce the considerable sound of the fan. It means there is no protective ring to shield the fuselage of the aircraft from the spinning blades should they disintegrate.

The manufacturers are all confident that they can build blades of adequate strength. General Electric will use composite materials—chiefly carbon fibre. Rolls-Royce is working on hollow titanium blades with a bundle of super-strong fibres within. Hamilton Standard prefers a tried-and-tested aluminium spar within a fibreglass shell and maintains that 100m hours of propeller operation without a structural failure justifies this approach.

Noise could well be the Achilles heel of the propfan concept—noise for the passengers in the aircraft rather than for the people on the ground.

First there is the unshrouded noise of blades ripping through the air at supersonic speeds. Second, there is the siren-like

effect of contra-rotating blades. Contra-rotation is required to get the maximum efficiency out of a propfan because the second row of blades redirects backwards the swirl left by the first. This interactive sound is of much lower frequency than in a fanjet because a propfan turns at only one quarter the speed and has far fewer blades. Low frequency sound carries further.

Noise is the main reason why current propfan thinking places the engines right at the tail of the aircraft with the blades mounted on the back of the engine. This arrangement reduces the exposure of the fuselage to blade noise and cuts down the amount of sound deadening material the aircraft manufacturers will have to build into the aircraft.

General Electric is confident that the noise problem is not

going to be as important as it initially expected. But Pratt & Whitney's propfan programme director, Mr Tardy Domagala, feels that noise performance is one of the key unknowns to be resolved in the next 18 months of propfan development and flight testing.

The first production propfan engines will typically have two rows of blades some 12 feet in diameter with six, seven or eight blades in each row. These will turn at around 1200 rpm, in opposite directions and require a total of some 15,000 shaft horsepower per engine.

Such an engine will be the equivalent of a fanjet engine of about five feet in diameter producing 25,000 pounds of static thrust. It will consume about 25 per cent less fuel than the fanjet at 550 mph.

between now and 1992 when, according to the US aircraft industry, the first commercial propfan airliners will fly.

A consortium consisting of the Allison Division of GM, Hamilton Standard and Pratt & Whitney believes that the propfan should be driven through a gearbox. Rolls-Royce, which is more doubtful and cautious about the future of the propfan, agrees.

General Electric of the US, on the other hand, has won Nasa backing to develop the rather elegant solution of contra-rotating fans driven directly by counter-rotating power turbines at the back of the engine. To make this arrangement efficient it has designed a slightly smaller propfan that will rotate a little faster than the geared version.

The proponents of gearboxes claim they will give them greater flexibility to choose the optimal, least noisy fan speed in the light of experience, without having to redesign their engines. But they admit that 15,000 horsepower constitutes a daunting gearbox problem. Even split between two 7,500 horsepower rotors it dwarfs the 3,500 horsepower of a big turbo-prop engine.

Sound Dutch idea which can triple the speed of typing

TYPING COULD be three times as fast using a new design of keyboard incorporating computer intelligence and keys which are related more to sounds than single characters.

Designed in Holland by Special Systems Industry, of The Hague, the Velotype keyboard allows both hands to stay in the same position (finger movement only). It is based on the fact that a syllable or word consists of one or more vowels and one or more consonants.

There are 37 keys split into three groups: initial consonants, vowels and final consonants. A word or syllable is typed by pressing a combination of keys from any of the three groups, rather like a chord played on a piano.

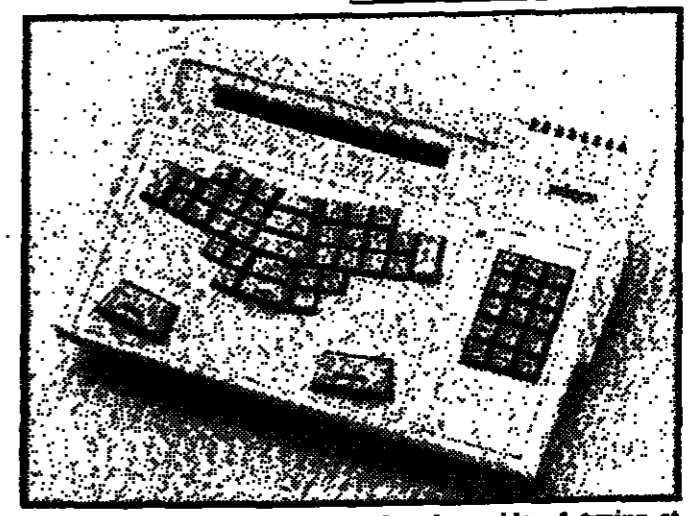
Velotype places the characters in the correct order using its micro and some software which distinguishes the front and rear of a word or syllable. The typist immediately sees the actual text on a single-line 48-character display.

Available for 15 Western languages, Velotype can be plugged in to any word processor, personal computer or typesetting machine. It costs £250. More from Velogick UK in London on 01-875 7970.

INTEGRATED OFFICE communications embracing voice, video, and data is offered in a system called BMax from Datapoint, the Texas-based automation company. As soon as some additional work is completed to achieve compatibility with UK TV standards, BMax will be made available in the UK.

The workstation has a high resolution colour screen, a small viewfinder screen (so that the terminal user can position himself correctly), a loudspeaking telephone and the usual keyboard.

These stations can be connected over a local area network using a single coaxial cable to carry all the services. A wideband (high information rate) system is also available that will support over 200 users. In the US, prices start at \$13,500. More from the Datapoint's London office on 01-459 1222.



The butterfly-shaped Velotype keyboard capable of typing at the speed of speech

A VIBRATION-monitoring accelerometer based on fibre optic techniques has been developed by the Swedish company, ASEA Research and Innovation.

A reflective sensing probe is connected by a single fibre optical cable to a unit containing a laser and measurement electronics.

Laser light entering the probe from the fibre strikes the sensor, which is a short length of metal clamped at one end. Vibration or any other motion causes the probe to vibrate or move,

Estek plans to develop silicon wafer processing "incorporating significant technical advances."

IBM PERSONAL computers in use by smaller companies for personnel and payroll applications can be made to collect clock-in data as well, using the Datamond 9007 unit from Hengstler Flex-time, the German-based company.

The package allows PC users to process statistics collected by up to 32 Hengstler time recording terminals, for payroll and other purposes. The Datamond is connected between the terminals and the PC. Hengstler is in Aldingen, West Germany on 74 248 9429 and in the UK on 0982 443464.

MOLTEN METAL filtration materials developed in the USSR are available from UMO Plant in the UK (04626 71411).

The filters are made by the Piram process, which yields silica-based fibrous material as woven cloth. After a special coating process, this can withstand temperatures of 1450 to 1700 deg C.

Improved filtration compared with conventional core and ceramic filters is claimed, giving half as many rejects from non-metallic inclusions in casting operations. Rejects caused by slag are virtually eliminated.

WORTH WATCHING

EDITED BY GEOFF CHARLSON

altering the reflective conditions which, in turn, changes the quality of the reflected light in sympathy. The changes are detected and produce electrical signals that are a measure of acceleration. ASEA is in Vasteras on 021-100000 or London on 01-930 5411.

CHIP MAKING equipment is to be produced by Eastman Kodak company, which has just launched a subsidiary called Estek for the purpose. Although it is not widely known, Kodak has designed and produced custom integrated circuits for its own camera and copier products for some years.

A FINANCIAL TIMES SURVEY  
**MERSEYSIDE**  
MONDAY, MAY 23 1986

- |  |   |
|--|---|
| Introduction                               | The "Resolute initiative" five years on |
| The Politics of Merseyside                 | Tourism and the economic structure      |
| Merseyside's Successes                     | Barrage across the Mersey               |
| Cammell Laird                              | Wavertree Technology Park               |
| Case-study                                 | Small Business on Merseyside            |
| Merseyside's Big Employers                 | Sport and the Merseyside image          |
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The Prospects for  
**TOURISM**  
in Britain  
22 & 23 April, 1986

Tourism is a vitally important industry in Britain but lacks an authoritative and independent forum for the discussion of strategy, for assessment of the changes that are necessary in such areas as legislation, tax and development planning and for examination of the investment aspects.

Mr Walter Goldsmith and Mr Kenneth Robinson will chair this major two day meeting which brings together a distinguished panel of speakers including:—

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- Professor Rik Medlik.....
- Mr Peter R Tyrie....
- Mr John L Broome....
- Lord Montagu of Beaulieu..
- Mr Colin M Marshall...
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And that a regular input of enthusiastic young people has a positive effect on everyone in a firm.

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- MARKS AND SPENCERS PLC
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- BRITISH PETROLEUM COMPANY PLC
- THE BURTON GROUP
- ALLIED-LYONS PLC
- THE BOOTS COMPANY PLC
- THE ASSOCIATION OF BRITISH TRAVEL AGENTS LIMITED
- WHITBREAD AND COMPANY PLC
- CADBURY SCHWEPPE'S PLC
- NORTHERN FOODS PLC
- BAKER PERKINS PLC
- PILKINGTON BROTHERS PLC
- INTERNATIONAL THOMSON ORGANISATION PLC
- BUILDERS' MERCHANTS FEDERATION
- GRAND METROPOLITAN PLC
- TESCO STORES LTD.
- BRITISH ASSOCIATION OF PROFESSIONAL HAIRDRESSING EMPLOYERS
- GALLAHER TOBACCO (UK) LIMITED
- THE DISTILLERS COMPANY PLC
- ESSO UK PLC
- TARMAC PLC
- ASDA-MFI GROUP PLC
- THE POST OFFICE
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- IMPERIAL GROUP PLC
- COURTAULDS PLC
- THE BOC GROUP
- SCOTTISH AND NEWCASTLE BREWERIES
- BRITISH SHIPBUILDERS
- IMPERIAL CHEMICAL INDUSTRIES PLC
- TATE & LYLE PLC
- AUSTIN ROVER
- BASS PLC
- ROWNTREE MACKINTOSH PLC
- ARGYLL GROUP PLC
- LITTLEWOODS ORGANISATION
- RANK XEROX LIMITED
- GEORGE WIMPEY PLC
- THORN EMI
- JOHN LEWIS PARTNERSHIP PLC
- THE GENERAL ELECTRIC COMPANY PLC
- UNILEVER UK HOLDINGS LIMITED
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THE ARTS

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Mr. Government/Edinburgh

Martin Hoyle
Edinburgh's attractive Royal Lyceum is doing its duty by native talent in staging Stuart Paterson's new work, a rare production of a full-length Scottish play. Actually rather longer than full-length, or so it seems. Both language and ideas are as grey, unyielding, and time-encrusted as Auld Reekie itself.

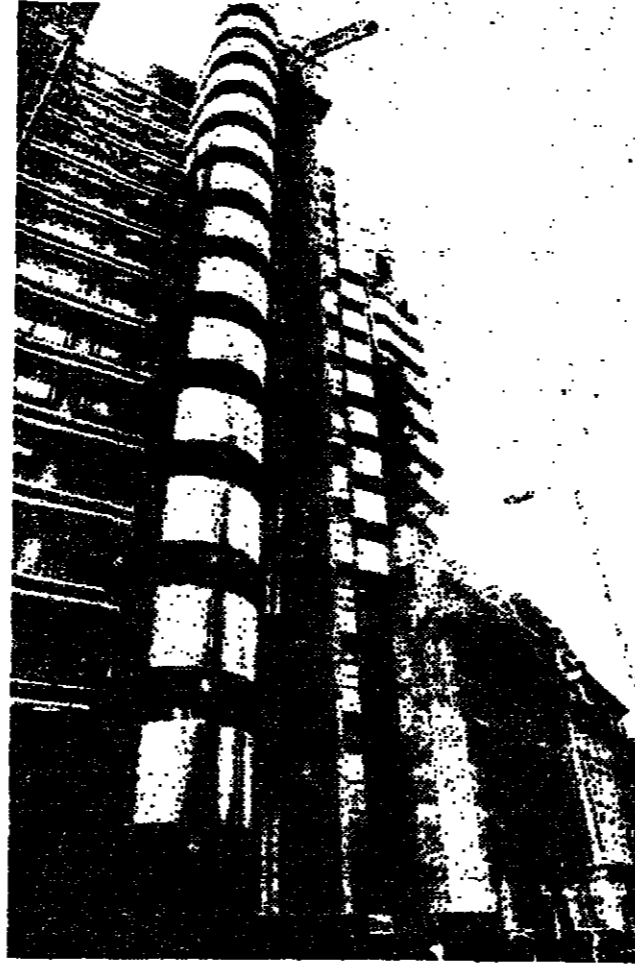
Under One Banner/Glasgow

Martin Hoyle
An old Edinburgh friend of mine maintains that the Scots have a sense of irony. This may be why the stage company 7-98 Scotland have come a cropper on their current tour. In the splendidly appointed Mitchell Theatre, an adjunct of that noble domed library below the wrong end of Sanchiel Street, under one banner purports to show how the old divisions between Orange and Green "are kept going".

Architecture/Colin Amery

Phenomenal Rogers unmasked

At last the truth can be told. The secret is out. You can discover for yourselves the agony and the ecstasy that lie behind the new Lloyd's headquarters. Not since Vasari wrote his Lives of the Artists in 1550, or possibly since Frank Lloyd Wright's An Autobiography of 1932, has the life of an architect been so roundly told.



The old and the new Lloyd's, due to open in the autumn

Until this 350 page book appeared Richard Rogers was known principally for his diagonal braces—not the sort he might wear over his collarless shirts—but a kind of structural four-de-force exposed on the outside of buildings such as the Pompidou Centre or the Immos factory in Wales.

In many ways this biography offers us enormous comfort. It is so frank and intimate that there are no cover-ups. As he does in his architecture so in life, Rogers lets everything show. And with everything revealed, including the constant setbacks to his career, the reader is amazed at the triumphant success he has made of his life. Richard Rogers is in his early fifties and there are other older and more interesting architects whose lives will never be thus recorded.

The Coronation of Poppea/Marlowe, Canterbury

Richard Fairman
With I Claudius being repeated on television the major figures of Imperial Rome are vividly before our eyes. The plot of The Coronation of Poppea moves the story on a few years; but, like Graves, Monteverdi and his librettist Susanello were fascinated by these historical characters, a group of people so extreme and unbridled that they lived out a drama mere fiction could never equal.

China/Bush

Antony Thorncroft
A series of short, sharp episodes hardly amounts to a play, especially as the parts remain resolutely one-dimensional. At the start it is mildly intriguing that the girl China should hug her parent to herself as closely as a guilty secret; by the end it is mildly irritating.

SNO to make European

The Scottish National Orchestra with conductor Neeme-Jarvi is to make a 14-day tour in Europe from April 22 to May 6. Cities visited will include Madrid, Vienna, Berlin, Dusseldorf, and the capital of Lichtenstein, Vaduz.

Arts news in brief

The Minister for the Arts, Mr Richard Luce, has refused export licences for three works of art in order to give national institutions the chance to raise matching sums of money to keep them in the UK.

The Snow Maiden/Logan Hall

Richard Fairman
Rimsky-Korsakov was immensely proud of his opera The Snow Maiden. With this piece he declared he was "a fully matured musician and operatic composer who had finally come to stand on his own feet".

Philharmonia/Festival Hall

Andrew Clements
Sibelius and Schoenberg ended their careers at the opposite poles of 20th-century music; but they shared a common starting point in the Wagnerian/Brahmsian flux of late romanticism.

Saleroom/Antony Thorncroft

Fine wine prices decline
This is Impressionist and modern paintings week in London, with sales at Sotheby's, Christie's and Phillips. There may be no masterpieces on offer but the state of the market — ever increasing demand — is chasing diminishing supply, with a resulting rise in prices and extra interest in second-rank artists.

Arts Guide

Table with columns for location (Netherlands, London, Spain, Vienna) and event details (concerts, operas, exhibitions).

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**TIO PEPE**  
SPAIN'S SHERRY  
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SECTION II - COMPANIES AND MARKETS  
**FINANCIAL TIMES**

Monday March 24 1986

**KYLE STEWART**  
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**KYLE STEWART**

INTERNATIONAL BONDS

**Swap moves put spotlight on to sterling issues**

STERLING and Australian dollar issues moved centre-stage last week as borrowers seized swap opportunities and investors' funds flooded the high-yielding sector. The Eurosterling market, boosted by the 1 per cent base rate cut on Wednesday following the budget speech by Britain's Chancellor of the Exchequer, saw particularly lively activity, writes Clare Pearson in London.

The fortunate combination of the base rate cut with an unexpected change announced in the budget - the imposition of a 1/2 percentage point stamp duty on certain build-up and long-term domestic loan stocks - opened a window for innovation: the long-term Eurosterling bond.

This was not a radical idea for investors in continental Europe familiar with 30-year and 40-year dollar bonds and following the general lengthening of maturities which has accompanied the worldwide fall in interest rates. On the domestic front, the evident appetite of British investors to mark a breach in their traditional in-stance on restrictive covenants attached to long-term borrowings.

Of the two 17-year issues, that for

Imperial Chemical Industries bore no covenants at all, and MEPC's bore only a restriction on future gearing. This is less onerous than alternatives open to the property company in the domestic market where it has several first-mortgage debentures outstanding.

The success of these issues led bankers to muse on the possible decline of the building market, though supranational issues are exempt from the new duty. They also found it ironic that the Government, after years of vain attempts to stimulate a domestic UK corporate debt market, might have sparked it instead in the Euromarkets.

The deals were, however, priced at attractive margins over gilts in an environment in which stocks were roaring ahead and short positions had to be covered in a hurry. UK fixed interest investment managers said of their hasty forage into the Eurobond market that they could adapt, US-style, to taking swift decisions on the basis of names and ratings, but would continue to be highly selective. This does not look like a free-for-all for every UK corporate to launch debt into the international capital markets.

Other borrowers also took advantage of investors' apparent confidence that interest rates were set to fall further and they launched conventionally-dated Eurosterling bonds with coupons of 10 per cent and below.

Tightest of the new deals was the 9 3/4 per cent 5-year issue for a subsidiary of Swiss Bank Corporation, but this was successfully placed with Swiss retail clients. Least tight was the issue for Investors in Industry, issued at a wide spread over comparable gilts on Wednesday, and traded at a premium to issue price thereafter.

	US\$	DM	FFM	Other
Primary Market				
US\$	4,785.4	28.7	1,836.7	208.0
DM	2,913.7	18.0	274.0	216.0
Other	2,852.3	0.8	743.3	166.8
Prév	1,112.8			88.5
Secondary Market				
US\$	24,003.7	1,488.0	14,822.1	3,911.8
DM	24,001.8	1,214.3	15,850.8	4,536.9
Other	14,851.1	194.1	2,182.8	3,383.7
Prév	11,033.7	178.6	1,874.2	3,308.1
Net				
US\$	16,489.0	30,483.8	54,951.8	
DM	19,814.7	37,238.2	84,132.0	
Other	12,703.5	10,790.0	29,332.2	
Prév	9,228.0	8,987.7	17,296.7	

Week to March 20 1986  
Source: AEO

The zero coupon structure brought new life to the Australian dollar sector, neglected by borrowers of late. A spate of issues took advantage of swap opportunities, and yields on Australian securities still looked high to investors despite a recent sharp rally in the domestic market.

All four were trading within their fees at the end of the week. On Friday, CIBC Australia, a subsidiary of Canadian Imperial Bank of Commerce, issued a 10-year bond - double the life of other issues - priced at 30.575 per cent, and with the novel feature of being payable in D-Marks. Bankers think the market for these instruments is not exhausted and more, probably 10-year, issues will surface next week.

The Euroyen new-issue market remained healthy, despite some uncertainty over the Opec meeting, which prompted profit-taking in the secondary market.

Borrowers continued to be attracted by swap opportunities, and as they were generally high quality names, their paper was absorbed. In particular, Denmark brought some welcome sovereign-name paper, and this was trading at about two points above its issue price on Friday afternoon.

Although activity in the Eurodollar market was muted, especially as many Japanese investors were squaring inventories towards their fiscal year-end, some borrowers issued new bonds.

In the floating rate sector, Manufacturers Hanover re-opened the market for US bank names, but no others followed.

In the fixed rate sector, a trend towards more generous spreads over US Treasury notes was clearly discernible. By contrast Unilever, which ventured to launch a seven-year issue at a margin of a mere 15 basis points above Treasuries after taking the fees into account, saw its bond end the week trading outside the fees.

Some more successful issues were directed at specific investors, such as Inco's 10-year 9 1/2 per cent bond, which was eminently attractive to banks seeking swaps, and BNP's seven-year deal, which with coupons rolled up for the first five years was designed to appeal particularly to Japanese tax-paying investors. Apart from these, the deal of the week was probably Victoria Finance's 8 1/2 per cent 10-year bond, said by the lead manager to be trading above issue price on Friday afternoon.

Aside from deals for Credit Foncier and Outokumpu Oy, the Ecu market, lacklustre on profit-taking, fell from new issuers' attention. West Germany was also quiet, as were the Swiss. But this helped investors focus on an innovative new structure - adjustable long-term puttable securities (Alps), issued by Swedish Export Credit (Sek).

The new Sfr 200m 25-year issue will pay interest in dollars at 7 1/2 per cent for the first 10 years and at five-yearly intervals thereafter at the annualised yield on five-year US Treasuries less 85 basis points.

Put options, exercisable on these interest payment dates, are linked to a fixed Sfr/dollar exchange rate. If this is higher or equal to Sfr 1.887, redemption is at par; if it is lower, redemption is for an amount equal to the original dollar equivalent of an investor's holding. The borrower's call option, exercisable at the same time, is at par.

Lead manager Citicorp said the deal was designed to lure increasingly sophisticated retail investors who, at least, will obtain coupons during the first period at levels about 2 1/2 per cent above those likely on a conventional Sfr deal for Sek.

**McLean Industries loses \$66.7m as fleet is expanded**

BY WILLIAM HALL IN NEW YORK

MCLEAN Industries, parent of US Lines which controls one of the world's biggest containerised shipping fleets, lost \$66.7m in 1985 and says its bankers have agreed to relax some of the conditions on the more than \$1bn it owes.

McLean, headed by 73-year-old Mr Malcolm McLean who was one of the pioneers of container shipping, said its 1985 loss was due to a combination of lower industry shipping rates during the latter part of the year, primarily in the trans-Pacific market, and the costs associated with new vessels and markets. In 1984 the company earned \$81.8m.

McLean recently spent \$570m on 12 of the biggest container ships in the world and has increased its capacity by about three times since mid-1984. The new fleet is being used on a round-the-world service and has been brought into service at a time when several other shipping lines have been increasing capacity. This factor, combined with sluggish growth in world trade, has precipitated substantial rate cutting.

McLean is one of the more highly leveraged shipping companies in the world and is gambling that it will be able to capture an increasingly large share of the market. The bulk of the shares are still controlled by Mr McLean, but the company had an initial public offering in August 1983 when it sold 3.27 million shares at \$6 per share. During the past year the shares have traded between \$14 and \$8 1/2, and are currently being quoted at \$8 1/2. At this level the company has a stock market valuation of less than \$400m.

McLean said about \$45m of operating loss and interest associated with phasing in the new vessels and the entry into new markets contributed to the 1985 loss while \$48.9m was deferred and capitalised.

The company expects to report a loss in the first quarter of the current year and as a result its US Lines subsidiary was not in compliance with certain financial covenants in its major loan agreements. McLean says its lenders have granted it a temporary waiver of compliance with these covenants and have agreed in principle to modifications of its loan agreements.

**Youthful market faces up to the demands of self-regulation**

THE Eurocommercial paper market, despite its youth, is having to face up to the demands of maturity, writes Alexander Nicoll in London.

The creation of a new regulatory structure to cover all London securities markets, now under way, has already meant the formation of a self-regulatory body, the International Securities Regulatory Organisation (Isro), to handle the Euromarkets' interests. It will also entail formal recognition of investment exchanges which must meet standards for settlement and price reporting.

For the Eurobond market, the Association of International Bond Dealers is gearing up to form the

central marketplace meeting whatever regulatory standards are set. The Securities and Investments Board (SIB), which is to be the umbrella regulator, has yet to come up with the precise requirements.

It is also likely that an investment exchange will need to be designated for short-term money market Euroinstruments such as notes, commercial paper, certificates of deposit and bankers acceptances.

The formation of a new trade association for Euronotes and Eurocommercial paper may be a step towards this goal. All houses which trade such paper have been invited to a meeting in London this evening which follows a series of informal

hunches during the past few months.

Estimates of the number of dealers likely to be represented range from 20 to 80. It is intended that the association's scope should cover all who make markets, even if they only do so occasionally or to a limited clientele. If that means a fairly large membership, then it is possible there would also be an inner core body for those who are particularly active.

Minimum general rules are likely to be set for standards of professional conduct, and with a view to investor protection. The association will attempt to ensure smooth growth of the market by attacking

some of its niggling problems, most notably that of settlement.

Although Euronotes and Eurocommercial paper are handled by several rival clearing systems, there is dissatisfaction in the market for example about the methods of transferring securities from one system to another, and about the ability of systems to handle paper with very short maturities.

Once the new association is formed, it is likely to link with the International Certificate of Deposit Marketmakers Association (ICDMA), which for 18 years has acted as a trade association for secondary marketmakers in Eurocommercial paper. Its 28 members are due to

meet tomorrow to discuss a revitalisation through the admission of associate members who sometimes make markets in commercial paper.

In the longer run, the combined body - due to be called the International Money Market Association - could form the basis for an investment exchange, also taking in bankers' acceptances, in the new City of London structure.

Westpac Banking Corporation is arranging a \$500m Eurocommercial paper programme to complement a US programme of the same size. Dealers are Westpac International Capital Markets, Merrill Lynch Capital Markets, Morgan Guaranty,

Morgan Stanley and Salomon Brothers International.

Singer, the US company which has dispensed with sewing machines in favour of aerospace electronics, is arranging a \$50m Eurocommercial paper programme with Citicorp Investment Bank as sole dealer. This is the borrower's first venture into commercial paper.

Istituto per lo Sviluppo Economico dell'Italia Meridionale (Isvem), the Southern Italian development bank, mandated a \$300m transferable advances facility, under which the borrower will draw six-month advances at 30 basis points above reserve-adjusted domestic US CD rates.

**Tokyo tightens curbs on margin trading**

BY YOKO SHIBATA IN TOKYO

THE Tokyo Stock Exchange has tightened the curbs on margin trading from today in a new effort to dampen increased speculation.


The exchange also issued an unusual warning to investors to be more prudent "because the market rally is clearly being driven by enormous liquidity and at an accelerating pace."

From Monday the exchange will permit only 80 per cent of the market value of securities to be used as collateral posted for stock trading on credit, down from 70 per cent. The 10 per cent cut means that less credit will be available for investors to buy or sell stocks on margin.

It will also mean more cash will be needed for margin trading because investors trading on credit must deposit a specified ratio of the value of a transaction with brokers in consignment guarantee money, some in cash and the remainder in securities.

These Bonds having been sold outside the United States of America, this announcement appears as a matter of record only.

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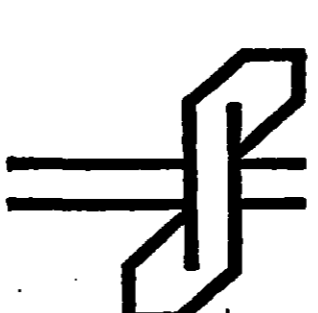
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March 1986



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December 18, 1985

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INTERNATIONAL CAPITAL MARKETS

US MONEY AND CREDIT

Volcker survives attempted coup at the Fed

MR PRESTON MARTIN'S decision to resign from the number two job at the Federal Reserve, apparently because the Reagan Administration refused to promise him the chairmanship, shows that Mr Paul Volcker, the current chairman, is living up to his reputation as the second most powerful man in the US.

At the start of last week there were some people in the financial markets who were beginning to have their doubts. Fed watchers were stunned by news reports last Monday that Mr Volcker, one of the most powerful chairmen in the history of the Fed, had been outvoted for the first time on a monetary policy issue.

According to the reports, Mr Volcker had argued against a cut in the discount rate at a meeting of the Federal Reserve Board on February 24, but had been outvoted by Mr Martin, the vice-chairman who is said to have long coveted Mr Volcker's job, and three other Ms Martha Seger, Mr Wayne Angell and Mr Manuel Johnson.

Table with 4 columns: Instrument, Last Friday, 1 week ago, 12-month High, Low. Includes Fed Funds, Treasury bills, Commercial Paper, and US Bond Prices and Yields.

Money Supply in the week ended March 10 M1 rose by \$5.7bn to \$237.6bn

less than three weeks and a dramatic boom in stock markets. It is the sort of period when financial markets can be easily rattled if it appears that the world's most powerful central banker is losing his grip.

By all accounts Mr Volcker was extremely upset by this unexpected challenge to his authority, and there have been reports that he threatened to resign. In the event he went to seek the support of Mr James Baker, the US Treasury Secretary.

tary, and shortly before the cut was to be announced, Mr Angell, one of the so-called "gang of four" Reagan appointees, apparently changed his mind, enabling Mr Volcker to reach a face-saving compromise. It was agreed that the US discount rate cut would be delayed until other leading central banks had moved.

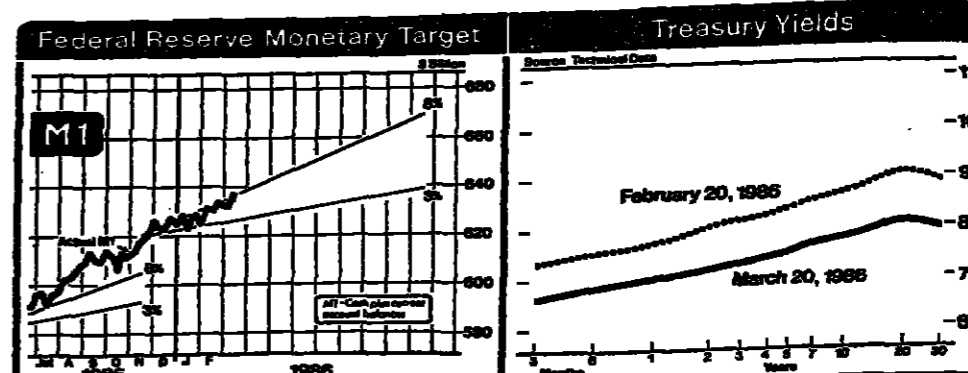
Ten days later, all seven members of the Fed voted in favour of a half-point cut in the discount rate and there the matter would have rested if the details of the internal discussion had not been leaked to the US media, which has been having a field day discussing the "palace revolt" and "attempted coup" at the Fed.

Ms Seger, who has often complained that she is being left out of the Fed's policymaking deliberations, fuelled the flames last week by saying that the Fed's Reserve "is not supposed to be a one-man show" and the initial vote of the Reagan appointees "signified some independence" from Mr Volcker.

coups was its "extreme incompetence." It said that the effect of Mr Martin's play was to "weaken the US in the tense and difficult international monetary talks now in progress." The New York Times described Mr Volcker's defeat as "a stunning rebuke to his extraordinary leadership for more than six years and warned that such reckless muscle-flexing also risked economic damage."

The initial reaction of the financial markets to the reports of open warfare at the Fed has been muted. The epic rally in the US credit markets came to a halt last week, but it probably had more to do with uncertainty about oil prices than any fear that Mr Volcker had lost control of his central bank.

In the foreign exchange markets on Tuesday the dollar



fell to a record low of 174.30 against the Japanese yen. This compares with Yen 260 a year ago but there was no sign last week of a sustained flight out of the dollar because of concern that Mr Volcker's influence is ebbing.

The immediate conclusion of the markets appears to be that the challenge to Mr Volcker was little more than a storm in a teacup." With the departure of

Mr Martin, the Fed chairman has lost his main critic on the board and appears to have strengthened his position in the short-term at least, although this could change depending on who is appointed to succeed Mr Martin.

While Mr Volcker and his allies no longer have a majority on the Federal Reserve Board, they continue to dominate the Federal Open Market Committee (FOMC). This is the main forum for setting US monetary policy and Mr Volcker can rely on the support of the presidents of the five regional Federal Reserve banks, who sit on the 12-member FOMC, to defeat any challenge from the Reagan appointed board members who might favour a faster easing of US monetary policy.

William Hall

UK GILTS

Budget speech buoys activity and prices

AT THE end of one of the busiest weeks of trading in recent memory the UK gilt market finds itself standing some 51 points higher than it did last Monday morning, all fears of an Opec debacle or an imprudent Budget behind it. Sterling shrugged off a full percentage point cut in base lending rates to end the week 1.6 higher on the Bank of England's index and comfortably clear of the \$1.50 mark.

There is no shortage of takers for the four partly paid stocks now on offer, which present a neatly geared invitation to investors. One of the four, Treasury 10 per cent 2003, was issued at £35 paid and now stands at £49.

The rise has been so swift that the market has as yet felt no need to pause and rethink its initial favourable impression of Mr Nigel Lawson's Budget proposals. This impression draws largely on the Chancellor's good cheer on the prospects for the non-oil economy and for inflation, and on his decision to name a lower public sector borrowing requirement target for 1986-87 than indicated last year.

It owes little to the restatement of monetary policy. No diehard monetarists have yet been observed attacking the adoption of an 11 to 15 per cent target range for sterling M3, the broad money aggregate, on the grounds of financial laxity. Yet there is no indication given in the Chancellor's Budget statement of why this range was chosen.

The slowdown in velocity of M3 has averaged around 24 per cent since 1979-80, according to stockbroker James Capel and Co, with 1985-86 velocity slowing by around 34 per cent. The Government's target for M3 in the coming financial year, however, implies a 51 per cent decline in velocity.

Some City analysts hope all will be explained in Mr Lawson's speech to the Lombard Association on April 16, which has been trailed by the Treasury as a major exposition of the Government's monetary policy. Others question how the Chancellor can explain a policy which they see as having no more than superficial significance.

"The EMS target seems to have been set largely because

it can be hit, not because it is necessarily consistent with declining nominal expenditure growth," comments Mr Gavyn Davies, chief economist at stockbroker Simon and Coates. "The high-pin of the original Medium Term Financial Strategy has become a target for derision."

Of more immediate importance to the gilt market is the PSBR — setting aside the expansion of government funding this year through increased asset sales. The market has responded gleefully to the cut in the Government's borrowing target, even though it is likely to require higher net gilt sales than the current year — especially now National Savings has no funding target to fall short of.

There are some doubters in the City who believe the Chancellor will not hit his borrowing target. Capels and Phillips & Drew, for instance, both forecast a PSBR outturn of £8.5bn for 1986-87. Some critics must mean mezzopiano for the time being. The market is in no mood to listen when Mr Lawson can turn in PSBR figures like those that

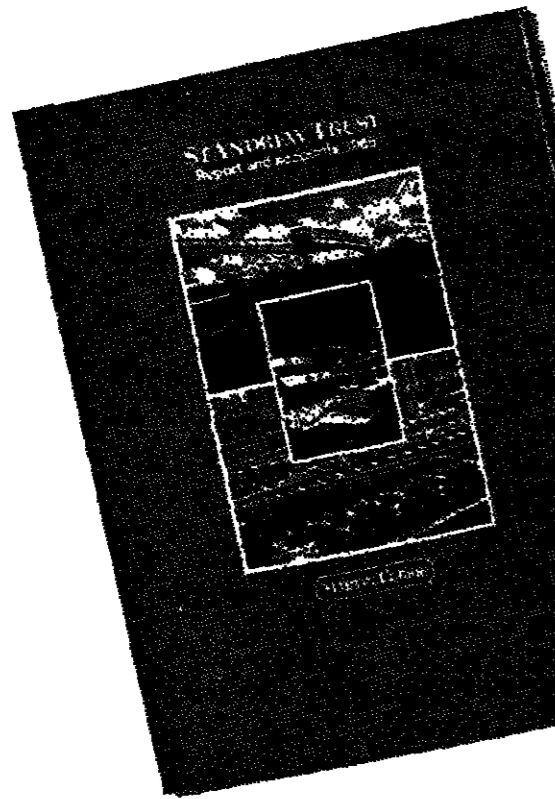
accompanied his Budget last Tuesday: a net repayment to the private sector of £373m in February, bringing the cumulative borrowing requirement for 15 months of the year to only £2.8bn, compared to £7.7bn at the same stage of 1985.

It remains unclear whether the markets will be any more inclined to listen to the authorities, which spent much of Friday busily signalling that it was time to stop and consolidate. By declining to buy bills in the afternoon, and instead lending at 2.90 pm to the discount houses at a rate of 12 per cent, the Bank of England showed its disapproval of a boisterous Treasury Bill tender where the top rate of discount dropped to 10.83 per cent.

The Bank then extended the message to the gilt market with £400m of new tranches of Treasury Loan 9 per cent 1994, Treasury Loan 8 per cent 1997 and Treasury Loan 8 per cent 2003-06. All three stocks are lines of 20 to non-residents, which will help to encourage overseas investors who still find UK yields attractive.

George Graham

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FT/AIBD INTERNATIONAL BOND SERVICE

Large table listing international bond services with columns for Country, Issued, Price, Yield, and various bond types like STRAIGHTS, CONVERTIBLE, and WARRANTS.

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INTERNATIONAL CAPITAL MARKETS AND COMPANIES

Banks set to launch Ecu clearing system

BY DAVID MARSH IN PARIS

A CLEARING system for international bank transactions in European currency units (Ecu) has been brought a step nearer following formal agreement by the Bank for International Settlements (BIS) to play the central role in the mechanism.

The banks are Banque Bruxelles Lambert, Credit Lyonnais, Generale Banque, Istituto Bancario San Paolo di Torino, the Brussels and Luxembourg arms of Kredietbank and Lloyds of the UK. More banks will become clearing members of the system from mid-1987.

West German banks, although members of the 68 bank-strong association set up to promote the Ecu, are not among the initial clearing members. German banks are not at present allowed to take on Ecu liabilities, with German residents wishing to hold Ecu in practice opening accounts with the banks' subsidiaries in Luxembourg.

Mr Remi Gros, in charge of banking operations at the BIS, pointed out that the leeway for European depositors to hold

Ecu accounts would grow if France and Italy eased their exchange controls.

Central banks are playing a growing role in the private Ecu market, holding about Ecu 2.5bn with commercial banks. This is in addition to the Ecu 45bn which EEC central banks hold as a result of the reserve asset-swap mechanism of the European Monetary System.

Bankers attending the Paris signing ceremony on Friday pointed out, however, that the Ecu market lacks a lender of last resort. In contrast to markets in national currencies, no central bank stands as the ultimate guarantor of Ecu liquidity in the inter bank market.

The BIS clearing accounts will be adjusted every day at 1600 hours. The individual Ecu balances of banks taking part in

the mechanism will be worked out through details of transactions relayed through the Swift international payments system.

The software system to allow Swift to carry out daily netting of banks' Ecu transactions will be delivered this July, with the system scheduled to start operating in January, 1987.

The French market in treasury bills, which companies have been allowed to issue since last December, does not yet fulfil all the conditions necessary for the security of operations and the protection of investors, the French Banks Association says, reports Reuter from Paris.

In its latest bulletin the AFB says the back-up line of credit which companies must equal to 96 per cent of the value of the issue, did not give subscribers an adequate guarantee of repayment or ensure their protection. There is also still a lack of information for investors about the issuing companies.

The AFB says companies are not required to publish half-year results until July this year. Moreover, there is still no rating agency, although such an agency is now being set up.

The AFB says the market should impose a minimum size for issues, for example FFR 150m (\$22m), as at present they can be very small, sometimes just a single bill of FFR 5m.

Since their launch, a total FFR 17bn of treasury bills have been issued by around 65 borrowers. Earlier expectations suggested that issues would total between FFR 10bn and FFR 20bn for the whole of 1986.

NEW INTERNATIONAL BOND ISSUES

Table with columns: Issuer, Amount, Maturity, Av. Rts, Coupon, Price, Book Runner, Offer yield. Includes entries for U.S. DOLLARS, AUSTRALIAN DOLLARS, D-MARKS, SWISS FRANCS, STEELING, and YEN.

Freddies sees potential gold mine area in OFS

BY KENNETH MARSTON, MINING EDITOR

A POTENTIAL new gold mining operation has been outlined in South Africa's Orange Free State on ground held by Free State Development and Investment (Freddies).

The plan is to mine it as an extension of the large lease area now held by Free State Consolidated Gold Mines (Freegold), the company recently formed out of the merger of the Anglo American Corporation group's four OFS gold mines.

Freegold and Freddies will be responsible for 55 per cent and 45 per cent, respectively, of the net cost of developing the new area and will enjoy profits from its exploitation in

the same proportions. Mings of the area is not expected to have any significant effect on the operational results of either Freegold or Freddies before 1990.

The ground covers the farms Jonkersrust 72 and Du Preez-leger 324 in the Virginia district. A prospecting programme now completed by President Brand (now part of Freegold) has shown potential for the exploitation of both the Basal and Leader gold reefs in the north and the Leader in the south. Freddies will pay R2.5m (\$1.2 or £206,000) to Freegold for prospecting expenditure carried out by President Brand.

Recovery at Minorco

BY OUR MINING EDITOR

MINERALS and Resources Corporation (Minorco), the South African Anglo American Corporation group's Bermuda-registered international investment arm, reports a recovery in half-year net earnings to \$64.7m (\$43.2m) from \$22m; the total for the full year to last June was \$104.6m.

Minorco points out that its share of earnings of Phibro Salomon ceased to be equity accounted following the sale of part of the holding last June, while the Inspiration Resources subsidiary continues to make losses.

For the full year, therefore, Minorco expects that earnings after equity accounting will be lower, but earnings from operations (which represent cash flow) will be "materially better." Meanwhile, the interim dividend is being maintained at 6 cents.

KLM share issue to go ahead this week

By Our Financial Staff

THE DUTCH Government will lose its majority stake in KLM, the national airline, this week as the company issues new shares to fund expansion plans. A complex reshuffle of the KLM share structure will cut the state's holding from 54.8 per cent to 36.8 per cent, although the Government keeps a supervisory role and will have an option to buy back into the company if it wishes.

The share issue on the London, Amsterdam and New York stock markets is to be based on Wednesday's closing price, which will help pay for them. The sale is of 15m shares, of which 6.75m will be sold in the US and the rest internationally.

KLM, which recently paid its first dividend for six years, expects net profits for the year ending March 1986 to be broadly in line with the F1 290m (\$113m) returned for 1984-85.

Munich Re growth

Munich Reinsurance expects a clear increase in turnover this year and next. The company, which is 25 per cent owned by the Allianz group of West Germany, gave the forecast when coming details of its planned two-for-nine rights issue which will raise DM 200m (\$89m).

Big first-half setback for South African engineer

BY JIM JONES IN JOHANNESBURG

SIGNIFICANT declines on construction activity and set-backs in international operations have sharply cut the interim profit of Murray and Roberts, a South African engineering, construction and consumer goods group.

Half-year after-tax profit dropped to R5 11.25m (\$5.4m) from R5 25.18m in the corresponding year-ago period. After-tax profits totalled R5 50.32m for the year ended June, 1985.

The directors attribute the setback to the continuing decline in factory building, large costs of holding resources

for capital projects which have been delayed and a significant setback in the foreign operations.

The company is pessimistic on immediate prospects saying that there is little prospect this year of an increase in gross domestic fixed investment on which the group is heavily dependent.

First-half earnings per share dropped to 42 cents from 74 cents and the interim dividend has been halved to 10 cents. Last year shareholders received a total dividend of 60 cents.

French Bank pays more

BY OUR JOHANNESBURG CORRESPONDENT

FRENCH BANK, the 55 per cent-owned South African subsidiary of Banque Indosuez, increased disclosed profit strongly in 1985 despite, as the directors say, the unfavourable political and economic climate.

French Bank does not disclose its profits fully, choosing to take advantage of provisions of the Banks Act which permit it to disclose profits after tax and transfers to and from inner reserves.

The disclosed profit increased to R7.46m (\$3.5m) last year from R2.93m. The board says that this was due to substantial business growth, an improvement in margins and continued tight control.

French Bank specialises in financing South Africa's agricultural exports. Earnings per share rose to 71.77 cents from 28.15 cents and the dividend has been raised to 15 cents from 10 cents.

EUROPEAN TRADED OPTIONS

Tuesday Wednesday Thursday Friday Only in the Financial Times

Advertisement for National & Provincial Building Society and BP Capital B.V. Includes details of £200,000,000 Floating Rate Notes due 1996 and an issue of up to U.S. \$100,000,000 of 9 1/8% Guaranteed Notes due 1994.







# FINANCIAL TIMES SURVEY

Monday March 24 1986

## Electronic Financial Services

Financial information in all its forms is the driving force of the electronic database industry. In the US alone, where several thousand services are now available, industry revenues could soar to \$10bn a year by the end of the decade.

### An information revolution

BY RAYMOND SNODDY

**E**LECTRONIC information services are coming of age. An area once dominated by obscure scientific and technological bibliographies on American databases, is now rapidly showing signs of greater business maturity, growing diversity and customer acceptance.

New databases are springing up all the time, although many of those already in existence are finding it a struggle to make money. Major players see the potential for growth and are increasingly being attracted to a sector where only smaller but enthusiastic entrepreneurs once reigned supreme.

Last month, British Telecom, potentially one of the largest players of all, announced it would launch a computer-based news and company information service by the end of April. Entry into the sector is being sought, too, by Citicorp, the US bank which last week announced a \$680m bid for Quotron, a Los Angeles-based supplier of stock quotations and data services to 50,000 customer terminals.

The day before the BT announcement, the Financial Times held a press conference to announce the setting up of its eighth electronic business service — McCarthy Online, offering a daily record of the full text of articles from 58 business publications from around the world, through most

existing desktop terminals. At the same time as new ventures are opening up, ones such as Prestel, Britain's pioneering videodata system, is now finally operating at a profit after a seven-year struggle. Teletext, a system originally developed to provide subtitles on television programmes for the deaf and hard-of-hearing, is being seen as having considerable potential for broadcasting time-sensitive information to private clients.

#### Optimism

One of the factors behind the growing optimism in information services is the increased penetration of micro-computers in every aspect of business and professional life. More people, particularly at middle management level, are becoming more comfortable with screen-based information. They now have the computing power available at their desks—not only to call up, but also to manipulate, electronic information.

Databases are moving out of the hands of librarians and researchers straight on to the desks of "end-users." The pattern emerging in the US suggests that the growth in the use of electronic information is in the process of changing the way not only business customers but also private individuals obtain an increasing proportion of their information.

According to some estimates there are already several thousand different databases in the US and revenues which totalled \$1.2bn two years ago

are projected to rise to \$10bn by the end of the decade.

Some companies, such as H. & R. Block's Compuserve Information Service, has increased the number of subscribers by nearly 50 per cent.

IDP Report, a database newsletter, found that 30 selected on-line services had an average growth rate of 32 per cent last year.

More and more companies and individuals are accessing databases for information on everything from legal precedents and medical research to credit-checking. Information World Review, a new traditional monthly newspaper for the information industry, even reports that a UN agency has set up a pilot project for a database on the environment covering everything from the habitats of elephants to the effects of new dam construction.

Financial information in all its forms, is, however, still the driving force of the industry. Information systems are already sophisticated enough to supplement, if not yet entirely replace, physical market floors for trading.

Two well-known examples are the Reuter foreign exchange dealing system, where deals are not only struck virtually instantaneously on screen, while a paper record is supplied almost as quickly, and NASDAQ, the over-the-counter exchange in the US.

A more dramatic example is the completely automated on-line futures exchange, Intex,



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● Pictured left: the dealing room at Rowak in Finsbury Avenue, London. Financial specialists are now spoilt for choice as regards the growing number of on-line information services available to them.

Picture: Roger Taylor

which is based in Bermuda and enables dealers to trade in futures by keying instructions into their terminals wherever they are and watch markets move on their video display terminals.

In the UK the market for financial services is dominated by Reuter which provides data to around 54,000 screens and 6,300 teletypewriters worldwide. This represents more than 17,000 subscribers to business information services.

Reuter emerged at the top in a recent survey of dealers and financial systems by First Market Intelligence, followed by the AP Dow Jones service Teletext and Topic. Significantly, all three are suppliers of real-time price information.

Although such specialists as dealers seem to have a boundless appetite for screen-based information, this has led to a proliferation of terminals on individual desks.

Reuters, through its purchase of Rich Inc of Illinois, may be able to tackle this problem. The Rich Composite Information System allows any information in the system to be displayed on Screens under the control of a single keyboard.

The UK business database market is dwarfed by the real-time financial systems. But according to a new report, How to Market Online Business Information to End-Users, it is now worth £20m a year and is growing at the rate of 50 per cent annually. The report

argues that apart from the increased use of micro-computers in business, the growth is coming because of the stream of new database services and a growing appreciation of their potential.

#### Costs

About 10,000 customers are using databases such as Textline and Predicasts and average users are spending £150 to £200 a month to retrieve information on company accounts or to research information in newspapers and trade magazines.

The report warns that the database industry has to bear in mind the fact that the product must "fit the user" and that both the product and the marketing effort must be ade-

quate to ensure a profitable operation.

The author of the report, Paul Ormerod, notes the entry into the field of major European information publishers, but he does not believe they will necessarily have it all their own way.

While the odds in this situation favour the larger information-producer and provider, and probably the integrated business, this is unlikely to discourage the appearance of many new products and services created by enterprising people who have identified gaps in the market," he argues.

Apart from the trend towards more fully-integrated electronic information businesses, changes in the technology itself could have a dramatic effect on the

future of the industry. Many specialists believe the future belongs to "relational databases," where information is stored in a way that each piece of information can be analysed in a variety of different ways, depending on the customer's individual needs.

Furthermore, Dun & Bradstreet, the credit-management organisation, has come up with a way of making their service more accessible. The company plans to launch "DunVoice," a credit-checking service, using computer-generated speech, to answer telephone inquiries.

"How to Market Online Business Information to End Users," Paul Ormerod, Headland Press, Freepost 23, London EC1A 7QT; price £295.

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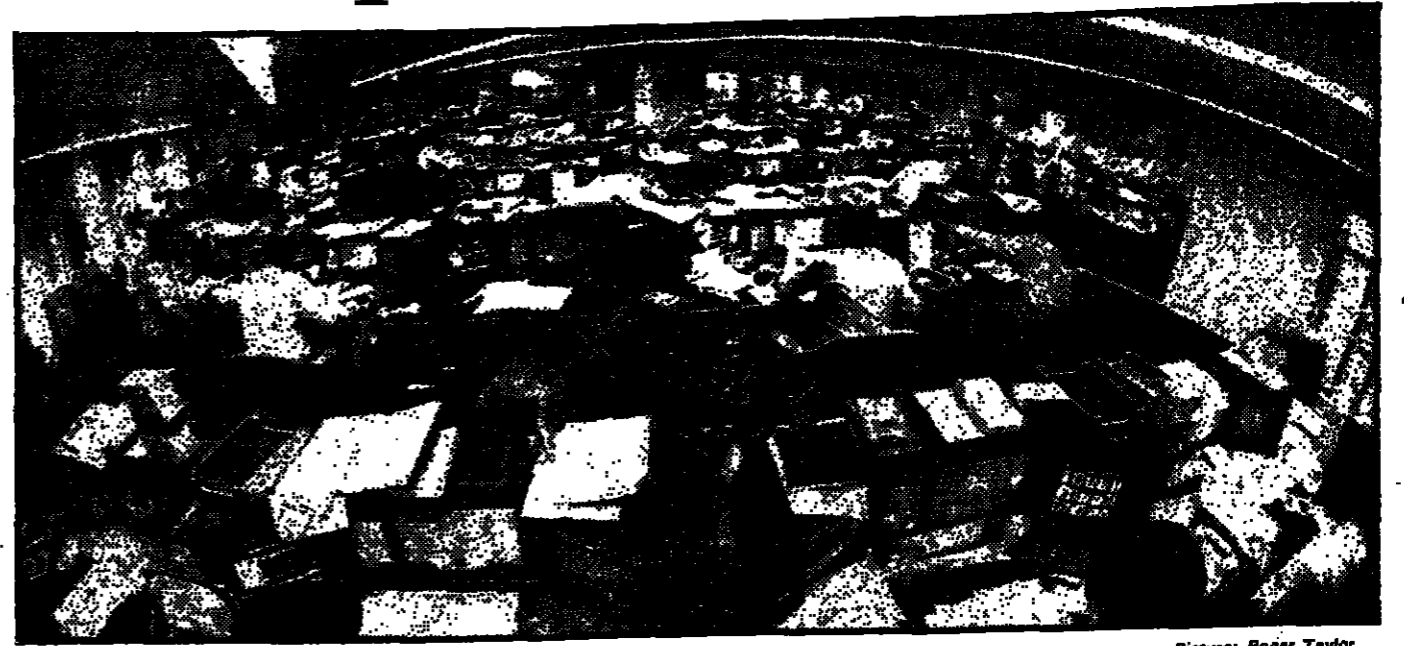
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## Electronic Financial Services 2

Reuters alone provides financial information to 54,000 screens worldwide.  
**Dealers spoil for choice**



London dealers can now choose from a range of 300 different on-line services. Above: The new dealing room at National Westminster Bank in the City.

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### On-line information

ALAN CANE

DEALERS and other financial specialists are spoilt for choice of on-line information services in London today. From a mere handful of services before 1980, there are now 300 different services available.

Reuters dominates the field in the UK. A recent survey of dealers and financial information systems carried out by First Market Intelligence (FMI) shows Reuters at the top of the information providers' league table, followed by the AP Dow Jones service Telerate, Topic and Datastream, in that order. Next came Finsbury Data Services while ADP Comtrend, Dialog and Pergamon Infoline shared sixth place. The last two places in the top 10 were filled by Quotron and Dun & Bradstreet.

To be fair, the FMI survey measured the popularity of the services used by customers and not the size or significance of the information providers themselves.

Exel, for example, did not appear in the top ten although it is certainly one of the major companies in the field; its information, however, is distributed to a number of other service suppliers as well as appearing on its own Exshare service. It shares the marketing and production of Exshare with Reuters.

The top three companies in the league, Reuters, Telerate and Topic all provide real-time price information. FMI's survey discovered, perhaps not surprisingly, that dealers are active and heavy users of on-line information. They do, however, prefer to stay with established services such as Reuters, Telerate and Topic because:

- These services have proved themselves to be fast in the provision of data.
  - Newer services have yet to establish a track record of accuracy or reliability.
  - The addition of a new service usually involves the addition of another piece of hardware on an already cluttered desk.
- But they are realists. Mr Nigel Killick of FMI says: "Dealers like money. No matter what was on offer — even

the most ridiculous idea — if you could convince them that it would help them in their dealing, they would accept it."

The report also notes: "Our research has shown many cases where Reuters is not used in isolation for foreign exchange, but works alongside Telerate. For those larger institutions which possess the resources to cover all the information requirements, the services of Reuters and Telerate are seen to complement one another."

"Talking to foreign exchange dealers, we were struck by the fact that they make deals on the basis of information from a thousand and one sources — not just the two or three screens on

desk, flashing out real-time prices and news, but traditional sources such as specialists in the marketplace who they will telephone to confirm prices and rumours, together with circulars, the newspapers

and even the radio in some cases."

Be that as it may, the key to Reuters present profitability is its unparalleled range of screen-based services. It provides data to some 54,000 screens and 6,300 teleprinters worldwide, representing more than 17,000 subscribers to business information services.

The list includes foreign exchange and money market services together with services for commodities, securities, bonds, shipping, energy, coins and precious metals, dealing, interface products, graphics, arbitrage, position keeping, historic data and news.

Reuters' own technology is decidedly mature but its recent purchase of Rich Line of Illinois in the US has given it access to one of the best of the new video-switching technologies. The idea is to tackle the most pervasive problem in the deal-

ing room today: the clutter of video screens on the dealer's desk.

The Rich Composite Information System confronts the dealer with one or more screens but a single keyboard. Any information in the system can be displayed on any screen under control of the keyboard.

Special innovations in CIS include source page pooling, a technique which allows many users to look at the same source page from a single data controller, and data page manager, providing access to any information source using a direct digital feed (stream of computer data).

CIS reduces the cost of information through its ability to access any of the current services. FMI notes: "Rich is the only company that Reuters will happily provide their service through a digital feed (Reuters will provide through others but only under considerable pressure)."

Telerate provides high quality information primarily from the US market. Its services include money markets, world currency, commodities, news international cash market profiles, and Telerate FID, a futuristic device not yet available in the UK.

It comprises a hand-held monitor, looking a little like a cross between a transistorised radio and a radio page. Some 300 Telerate pages have been converted to run on the device, including foreign exchange and currency futures, fiscal income markets, world bullion markets and precious metals futures and energy.

The information is relayed from the source by radio and displayed on a tiny liquid crystal display. The Topic service of the London Stock Exchange now reaches over 3,000 terminals in the UK.

Topic is a low-priced but generally effective viewdata-based system carrying market process, company announcements, market overviews, exchange rates, traded options, North American prices and crude oil prices among others. It also provides a variety of

computer-readable services such as "Hotline," a real time feed of market mid-price data on the continuous securities; "Dateline," a real time feed of file maintenance data for subscribers needing to know any changes to the Exchange's Epic database; and "Valuine" for subscribers who need to know the actual price spread or two-way prices for valuation purposes.

On October 27 this year, the Stock Exchange Automated Quotations service, SEAO, the key to the future development of electronic information in the City, will be added to the Topic service.

### Accounting aids

Quotron Systems, based in Los Angeles, is a US company making significant and aggressive moves in Europe. Its services are marketed and sold outside North America by a partnership including Quotron, the Associated Press and Dow Jones.

It has recently launched a financial office service called Q1000.

It is basically a powerful minicomputer linked to intelligent terminals which provide services such as a portfolio system designed to aid brokers' accounting and book-keeping, a data base management system and business graphics in addition to word processing and spread sheet analyst programs. The Q1000 is available in Europe although none have yet been sold here. It is reported to have had a good reception in the US.

What is clear from this overview of some of the principal services is that the technology is still inextricably linked with the service. Until a standard "dealer desk" can be agreed, that is likely to remain the case.

First Market Intelligence, is on London (01) 821 0263. It publishes the Financial On-line information report at £780, plus £350 for a year's subscription to the quarterly update service.

Technologists believe the future belongs to relational databases which allow users to analyse information from different viewpoints.

## Tailored services will test limits of technology

### Keys to development

ALAN CANE

SIMPLE PROVISION of information is no longer enough; the key to the future lies in selling an information package which seems tailored to each individual user and that will stretch the technology to its limit.

There are three basic components in any system designed to provide customers with easy and immediate access to information held in a computer memory.

First, a way of capturing the data speedily and in a cost effective manner. Second, a method of arranging the information in the memory of the computer so the customer can have access to it quickly and effectively. Third, a technique for presenting the information to the customer so it seems both useful and accessible.

Experienced electronic publishers like Mr James Ducker, managing director of Pergamon-Infoline and formerly with Datasolve, argue that the central technology, the computers and the disk drives which hold the information ready for immediate access, is now mature. Conventionally, comparatively large mainframes are used to provide on-line information services, although "supermini" computers also have sufficient power and capacity.

The UK Prestel service, for example, runs on a series of GEC minicomputers.

The heart of any on-line system, however, is the disk drives. Information is "written" on the magnetic surface of large metal disks which spin endlessly in the drives. The information is read off the disk by a read/write head which is moved over the disk surface by an articulated arm. The whole device is a little like a large, futuristic record player. The disk drive is a compromise between the speed needed to provide a customer with information in a reasonable time and the cost of semiconductor storage.

There is little now that can be done to improve the speed with which the articulated arm moves to position the read/write head over the desired section of the disk — that is limited by the physics and mechanics of the device.

Moves to add intelligence to the electronics which control the operation of the disk could result in the appearance of extra speed for some customers. The idea is that most customers want to look at particular sets of information in most of their inquiries and only occasionally look at data outside that set.

With intelligence (essentially a small computer and some high speed semiconductor memory) built into the disk controller, the system can seem to "learn" what the customer wants and be ready to provide the information in a "prepared manner."

Conventionally, information is retrieved from on-line systems using specialised database software such as BRS Search — operated by Datasolve's World Reporter service — which enables the user to move through files using a comparatively small number of commands: "get", "pick", "context" and "text" are typical examples.

The information is stored on the spinning disks using a technique called the "inverted file" where virtually every word is indexed. When a customer asks to see a particular set of information, the system can search the index much more rapidly than it can examine its entire library. The inverted file technique is common to many database software systems.

### Retrieval

Earlier this year, for example, ICL, the UK computer company announced that it would market Assassin 6, a well-regarded information retrieval package written by ICL, the chemicals giant.

What makes this deal particularly interesting, however, is the possibility that ICL will combine Assassin with an invention of its own, CAPS, to provide a sharply improved search technique. CAPS, content addressable file store, is a hardware device unique to ICL and now supplied as a standard facility on many of its larger machines. So there is some way to go yet in squeezing more power out of conventional systems.

Most computer technologists agree, however, that the future belongs to what are called "relational databases" sets of information which are stored in the computer in such a way that the relationship between each piece of information and the rest can be analysed in different ways.

So, for example, it would be possible to find out who has

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## Electronic Financial Services 3

With the advent of the electronic stock exchange, deals are being struck in seconds.

# Rapid data: a vital commodity

### The world's stock exchanges

ALAN CAINE

INFORMATION TECHNOLOGY can force organisations to reassess their business ambitions with searching clarity. Banks, for example, traditionally in the business of taking deposits and making loans are now firmly in financial information publishing through their cash management services.

And the world's stock exchanges, ostensibly market places for the buying and selling of gilts and equities, are taking up much the same role through the dissemination of market prices and other dealing information.

Electronic technology is, in fact, driving a powerful convergence between the role of a stock exchange and its role as a disseminator of information to its members and customers.

The logical conclusion of this process will be the development of information systems of such sophistication that they supplant the physical market floor entirely, providing an electronic exchange through which traders can deal as well as receive market information.

Examples of this kind of convergence already exist in the Reuters foreign exchange dealers system and the NASDAQ over-the-counter exchange in the US.

#### Bermuda

Perhaps the best example, however, is the completely automated on-line futures exchange, Intex, based in Bermuda and formed by a special act of the Bermuda Parliament in 1981.

It was founded by a group of US businessmen committed to the idea of a more efficient way of carrying out futures trading. They include Mr Eugene Gummer, formerly director of international commodities at Merrill Lynch and Mr Wallace Sellers, director of diversification and joint ventures at Merrill Lynch.

Running on a powerful computer complex built by Digital Equipment Corporation (DEC) of the US, the exchange currently trades contracts such as the 100 ounce gold future contract and the Ocean Freight Rate Index Contract. Market



Japanese brokers in action surrounded by visual display units on the bond trading floor of the Tokyo Stock Exchange.

makers subscribing to the exchange post their bid and offer prices for contracts into the system, watch the markets moving on their video display screens and trade by keying their instructions into the terminal.

The deal is executed within three seconds, and both parties to the trade receive confirmation notes from their printers.

According to First Market Intelligence, a market consultancy specialising in on-line financial information, Intex will eventually operate 24 hours a day. It says that the system should avoid the misunderstandings common on a crowded pit floor where deals are executed by the waving of a hand and a nod of the head.

But it warns: "Intex is a high risk venture. It will depend on volume to function efficiently and to generate a fluid market. Even if it obtains the volume, it will probably be copied. But whether Intex succeeds or fails,

one fact is certain — the concept of an electronic market floor is here to stay."

So the world's stock exchanges are investigating anxiously and urgently the position they should adopt in these new markets, often against a background of discontent and dissent from their members who would be happy to settle for a more traditional role.

In London, for example, where the end of minimum commissions and single capacity dealing is driving the "Big Bang" scheduled for October 27 this year, there was considerable debate among Stock Exchange members before it decided to go ahead with its own electronic information services.

It already operates a low-cost but effective system called Topic based on videodata technology. This is fed by a team of Exchange reporters who collect prices on the market floor and put them into the Ex-

change's data collection computers.

After Big Bang, the Topic service will be modified and improved by the addition of a new set of computers to provide SEAQ, the Stock Exchange Automated Quotations system.

This will provide information at three different levels and in two separate forms: videodata format which can be displayed on brokers/dealers existing video terminals, and as a computer readable feed (stream of information in electronic digital form).

This computer readable feed, to be known as Marketline, is among the more important of the Exchange's information publishing activities because it provides the raw material for the Exchange member's own computer systems to work on.

The argument goes that while every broker/dealer has access to the SEAQ information, those with computer systems which

can process the data into a more immediately useful form, will have an immediate competitive advantage.

Furthermore, they will be able to resell this information to become information providers in their own right.

So Hoare Govett, for example, one of the largest City stock-broking firms, established Datastream as its research department back in 1964. By 1970 it was installing computer terminals in its client's offices to provide access to a securities database and by 1983 had been sold to a consortium of UK businesses and then acquired by the major US financial information organisation, Dun and Bradstreet.

#### Private clients

Hoare Govett now offers information to a closed user-group on Prestel, the British Telecom videodata service. It offers general financial information to any Prestel subscriber, but its summary of world markets, London stock market reports and portfolio management services are available only to its private clients.

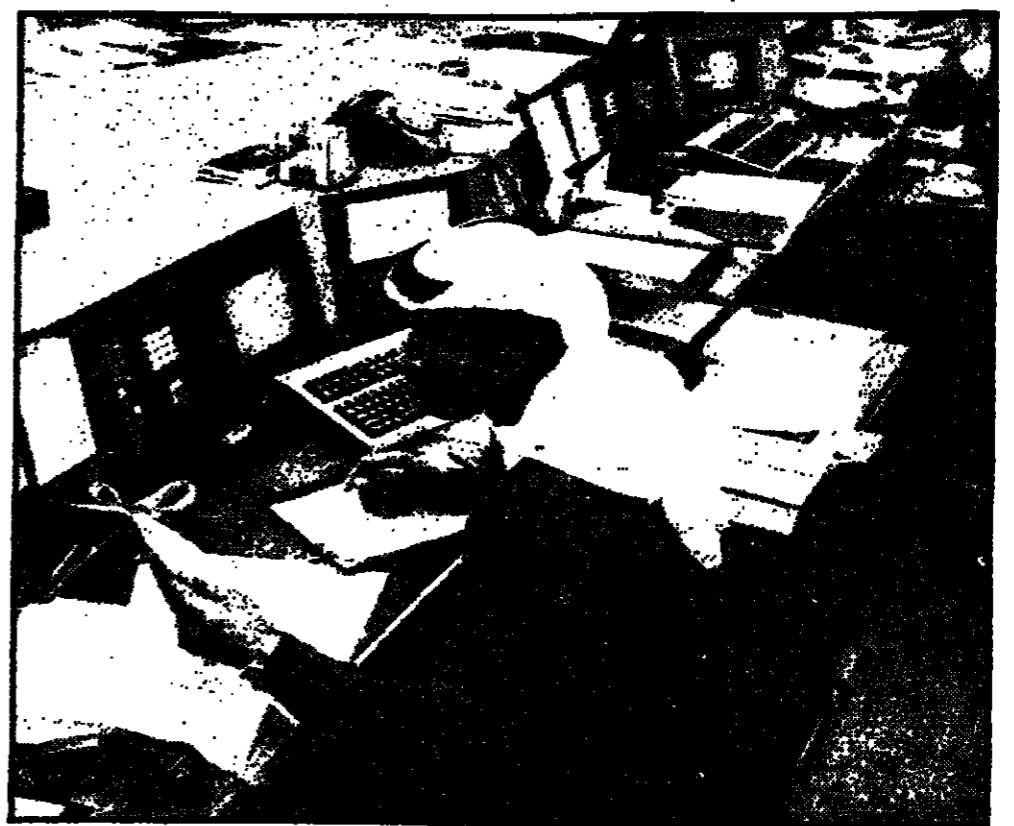
Hoare Govett also offers a "teleshopping" service, the first in the UK, through which shares can be bought and sold over Prestel—an interesting and early pointer to the electronic market floor of tomorrow.

Information from US Exchanges is available in Europe through a number of on-line information providers including Reuters, Quotron and Telerate, but one of the few providers of real-time information from all the Japanese Exchanges is Quick, the Quotation Information Centre KK (Reuter operation a Japanese language service, but only in Japan itself).

A new service specially tailored to Europe is being readied for launch in April 1986 providing trading ranges, price, opening, high, low and volume details for the Tokyo, Osaka and Nagoya exchanges.

First Market Intelligence notes: "The arrival of an English version of Quick has long been awaited by UK users. The main criticism has been that although details were accurate and reliable, all the headings were in Japanese. Not much help for non users of either Kanji or Hiragana!"

So the advent of the electronic stock exchange may be slowed by factors other than the sophistication of the technology.



A Bahraini dealer checking currency rates at the foreign exchange dealing room of the Gulf International Bank at Manama.

## Tailor-made data services

CONTINUED FROM PAGE 2

possible to examine the entire staff structure of a company from a number of different viewpoints — the personnel department, for example, would want to see the information arrayed in a completely different way to the treasury or the company secretary's office. Relational database software makes this possible.

Relational database computers — the Britton-Lee machine is a good example — are computers designed to take advantage of the principle of relational technology.

The combination of this kind of computing machinery with the kind of powerful graphics software which can now run on desk-top personal computers offers attractive new possibilities, however.

It would be possible to ask of such a system: "Show me the number and location of all the chip shops within a five-mile radius of Manchester city centre" with the result that a

map of the area would be drawn on the computer screen showing the shops in fine detail.

Input of information is a comparatively mature business now. Some information is still laboriously keyed in, but for most on-line service providers, the raw data arrives as computer tape, or disks.

Where masses of text have to be captured by the system, automated document readers such as the Kurtzweil can help but they tend to work more effectively on high quality magazines than grubby newspaper.

#### Key questions

The real challenge for the on-line companies is finding better ways of providing their information to their customers. The accent is on manipulating the data to give each customer the impression that the data displayed has been tailored for their use alone.

It involves questions of the number of screens a dealer should have on his or her desk, for example. At the moment, four is common and six is not

unusual. Yet most dealers say they want only one screen on which all the information they require can be displayed — perhaps through "windowing," a method of partitioning the screen into smaller segments, each independent of the rest.

The principal problem for all these companies is how to spread their services among a larger number of customers. Dun & Bradstreet, the world's largest credit management organisation, for example, are soon to introduce DunsVoice a credit-check service which uses computer generated speech to answer telephone inquiries. Priced very competitively, Dun & Bradstreet hope this will encourage smaller customers to make more use of their service.

At international level, the European Host Operators Group is investigating the possibility of common access to any database owned by its members. As Mr Michael Gardner of Data-solve said: "Some 60 per cent of people who could be our customers do not yet have a computer terminal and modem."

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# Electronic Financial Services 5

## Commercial range finds broader base

**Teletext**  
RAYMOND SNOODY

THE COMMERCIAL outlook for teletext, invented originally as a system of providing subtitles on television programmes for the deaf, is in the process of being transformed.

Until recently the main use for teletext, which uses spare lines on the broadcast television signal to transmit pages of information to specially adapted television sets, has been to provide a news and information service.

The BBC claims 10m viewers for the 600 pages of information on its teletext service. Coefax and Oracle, the independent television vendor, reaches a potential audience of 9.5m according to market research.

Both the BBC and Oracle are now involved in new commercial services designed to use the teletext technology to deliver specialised information for business and industry.

Teletext has two main advantages over other delivery systems. It is relatively inexpensive because it is going out piggyback on the broadcast signal and does not involve telephone charges. Any service is national from the moment it is switched on because of the reach of the broadcast transmitters.

The BBC subscription service, Datacast, is now up and running and according to Mr Lawson Brown, head of Data Broadcasting at BBC Enterprises, the commercial arm of the BBC, the first customers, talks, he said, are at an advanced stage with the Stock Exchange.

Bookmakers were also interested in the possibilities. Apart from transmitting changing information on starting prices Datacast could even help bookmakers keep within the law when it becomes legal to have televised racing in betting shops from this month.

The Datacast system will be able to switch off television sets automatically all round the country when racing ends and normal programmes begin—something required by law.

Retail groups are very interested in the possibilities arising out of teletext because price changes and credit card checking information can be distributed to shops all over the country virtually instantaneously. The service is encrypted to ensure confidentiality.

"For a company with 700-800 retail outlets it really does become very cheap," Mr Brown says. The operating cost, apart from a black and white television licence, will probably work out at about £140 a year for each shop.

The BBC is offering "a completely transparent data transmission channel to computer, which is independent of the teletext computer." The Corporation hopes that Datacast will rapidly turn into

a multi-million pound business. Mr Warren Taylor, chairman of Air Call, the call answering and telecommunications company, is also optimistic about the commercial application of teletext technology.

Air Call is in a joint venture with Oracle—Air Call has 75 per cent, Oracle the rest—and the subscription service went live last month. Under the deal, Air Call will pay Oracle about £2m over the next three years.

"I think it will probably take a couple of years before the service gathers momentum," Mr Warren concedes, but by 1990 he believes the "broadcasting" element of the service, which probably accounts for 10-15 per cent of the whole, should be a £10m-a-year business.

**Financial sector**  
Mr John Stanley, chairman of Air Call until his death in October, first saw a subscription use for teletext 10 years ago and wrote to the Independent Broadcasting Authority asking for permission. "It's a shame he didn't live to see our service go live," Mr Warren said.

Air Call is concentrating to begin with on the financial services sector and a number of major financial institutions have agreed to begin trials this month. "The system allows us to send significant amounts of data out at about 19.2 kilobits a second. It's pretty heavy stuff," Mr Warren adds.

Unlike the BBC, which is using a line-based packet system of transmitting information, Air Call is using existing page-based formats. It also already has its first subscriber—Electron Systems (Marketing) of Potters in Bedfordshire.

ESM claims it has effectively transformed teletext from being a passive information service into a viable on-line database. It has developed software and

decoders which link teletext information to personal computers. Information such as the latest foreign exchange rates are integrated with the view of normal teletext information and are built up in the computer memory allowing trends to be manipulated graphically. A stock exchange and portfolio management service is also being added.

ESM is aiming the service at companies which could not justify the cost of the more sophisticated on-line financial services. ESM is leasing its package—excluding the personal computer—for £1,750 a year.

Mr Alan Jones, a consultant who has produced the only comprehensive report on the field of subscription teletext believes it is opening up a new tier of the market for financial services and information. It has taken 10 years to make teletext fully commercial but the knowledge gained will now prove immensely valuable, he believes.

Meanwhile mainstream teletext continues its development. Last month the BBC Coefax service was significantly speeded up by broadcasting on six spare lines rather than four. As a result the maximum wait for news and information has been cut from 30 to 15 seconds.

More than 3m homes in the UK have now have television sets which can receive teletext at a penetration level of 14 per cent. The number is increasing at an estimated average rate of 70,000 a month and a total of 850,000 new sets are expected to be bought during this year.

According to National Opinion Poll research, Oracle, which is now starting to trade at a profit has a daily audience of 2.5m adults and 4.5m during the course of the week. The research also shows that 76 per cent of Oracle viewers have seen advertisements on the system.

## Switch to specialist areas is profitable

"PRESTEL IS making a profit this year... this is a really important moment in our lives," says Mr Richard Hooper, head of British Telecom's value added systems and services, which have activities ranging from Yellow Pages to electronic mail.

It has taken Prestel seven years to get into the black and only then after making write-offs of around £40m—equivalent to about 2800 a subscriber, at present levels.

Prestel has been widely criticised for those losses, its failure to achieve mass sales, and because some people find it tiresome to use, instead of easy, as it claims.

Development began on Prestel about 15 years ago at the Martlesham Research Laboratories of the Post Office, as it then was.

The vision at that time was to create a mass market which would stimulate the use of the telephone network. An additional benefit would have been the stimulus this would have given Britain's television manufacturing industry.

Richard Hooper complains that Prestel's critics ignore the fact that it abandoned attempts to create mass sales over four years ago.

"There is an obsession with terminals. It really does not matter how many terminals there are; the key is the revenues. Look at Reuters," Prestel now has 85,000 terminals, which are roughly equally divided between residential and business users, although the latter provide it with significantly higher revenues.

When it became abundantly clear that the travel industry market for Prestel, the company switched to specialist markets, first for business and then for the home.

Prestel have been a notable success in the travel industry. High street travel agents can use the service for information on holiday bookings with the holiday companies and airlines.

"The growth in Prestel is coming in segmented markets, such as travel, insurance, farming and lawyers," adds Mr Hooper.

In each of these segments, small businesses play a significant role—the travel agents, the insurance brokers, the farmers and local law firms. Prestel's advantage is that it is a relatively cheap terminal and data base.

Residential customers have also been attracted by some of the new specific applications, rather than the ability to gain access to all of its data base. Home shopping, for example, has joined to use Micronet 800, which gives them access to software, information and an ability to communicate with each other.



Air travel cost inquiries being made through the Datasolve system.

## Accent on better marketing

**Profile: Datasolve**  
JASON CRISP

"THIS IS a game for grown-ups. You have to grit your teeth and put up with the costs. It would be extraordinarily foolhardy for anyone to enter the market now, unless they are very rich," says Peter Cotton, director of electronic publishing at Datasolve.

There are other people in the database industry who have had just such thoughts about Datasolve's own foray into electronic publishing. Even if its investment in its World Reporter database is small in comparison to that giant US rival, Mead Data Central, it is still a substantial sum for a computer bureau such as Datasolve.

World Reporter's apparent problem, says some observers, is that it is so small it will never be able to compete with something as vast as Mead Data Central's Nexis database which has about 30m articles.

Not true, says Peter Cotton, who was recruited a year ago to add some dash to World Reporter's marketing. "I've a hang-up that marketing in high technology companies is not bad... it is non-existent. Datasolve underestimated how this business could be moved ahead through marketing."

As a result, Datasolve has started to target specific industries, such as advertising, rather than rely on providing a general purpose news and current affairs database. Nonetheless, it is hard to find many people in the industry who are very optimistic about World Reporter's chances. Even the confident Mr Cotton does not expect it to be in profit for about two to three years.

pedestrian but consistent 15 per cent a year—which may be seen as good, in some industries. Most of the early effort was in signing up and putting newspapers, magazines and transcripts of broadcasts onto the computer. Even now 80 per cent of Datasolve's revenues in electronic publishing come from supplying databases for the internal use of organisations like BSC, Consumers' Association, MP and Mintel.

World Reporter now has a variety of sources for its data base including the FT, the Washington Post, Japan's Asahi News Service, the BBC's external news service, the Economist. Its most recent addition is TASS, the Soviet news agency.

Clearly, World Reporter has an uphill task selling the service when Nexis contains so many more publications. Cotton argues that World Reporter is a lot cheaper (£80 per hour), and it is easier to use. He also agrees that Nexis is so large and nebulous that it finds it hard to focus its marketing.

With only a slow growth in World Reporter in the UK, Datasolve has begun to aim at much more specific markets and is seeking to become much more international.

It has recently launched new databases aimed at specific markets such as exporters and the advertising industry.

"Our view is that product development in the information business has traditionally been on a blunderbuss basis where people have blasted away and hoped for a hit. "So far, we have not seen much attention focused on the needs of the users," comments Mr Cotton.

**Profile: Prestel**  
JASON CRISP

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Another draw has been the Nottingham Building Society's Homelink—the country's first specialist banking service. Customers can check their balance and pay bills using a Prestel adaptor from their home.

Criticisms of this service include the tiresome—but necessary—security codes, the time it takes to use the system and the obvious fact that you cannot do the two most important banking functions: paying in and withdrawing cash.

Small investors can now use Prestel to buy and sell shares through services offered by stockbrokers Hoare Govett and de Zoete and Bevan.

The latest and perhaps most promising addition to Prestel is home shopping. Telecom has enabled owners of Prestel sets in parts of London—such as Kensington, Westminster, Chelsea and Hammersmith—to order goods from Laland Foods supermarket chain. If ordered in the morning, these are delivered by van on the same day.

SMF 6 MOB  
CFD 22\*36  
SXI 3\*16B

COMPANI  
ASSUMIN  
BERG ENT  
ASSOCIAT

0\*49C IT  
IBM 4A 1E  
TIME 10.1  
BOCU+29  
USH+6917  
BPZ-700+2

APDJ/QUOTRON

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APPOINTMENTS

Senior changes for Davy British Rail

Mr. E. W. M. Orr has been appointed joint managing director of DAVY BRITISH RAIL INTERNATIONAL, succeeding Mr. Ian Nichols...

Sir Hugh Cudde has been appointed chairman of the HOUSING CORPORATION for a three-year term from May 1. The Housing Corporation provides a range of housing services...

Mr. Brian E. F. Hill becomes vice-president of Laidlaw JOHN LINDSAY'S Spanish subsidiary in addition to director of procurement services...

Sir Peter Reynolds has been appointed a non-executive director of NATIONAL TYRE DISTRIBUTORS ASSOCIATION. He is managing director of National Tyre Service...

Dr. E. B. Walker, ICI's commercial manager, vinyls and plasticisers, has been appointed director of personnel at British Aerospace.

Mr. Mike Cavanagh, director of Cavanagh Associates, has been appointed managing director of both companies. He succeeds Mr. Desmond Cavanagh...

London International Financial Futures Exchange (LIFFE), has re-elected five directors for a three-year term. They are: Mr. C. Henry (R.P. Martin Futures); Mr. A. F. La Roche (Cater Allen Futures)...

SUTCLIFFE SPEARMAN resigns its board from April 1. Mr. J. G. Beak succeeds Mr. A. J. Whewy as chairman. Mr. N. D. C. Wilkes has been appointed group chief executive...

responsibility for long term strategy. Mr. Penwick-Smith was for many years a member of the management board of Thyssen-Bornemisze and is presently chairman and chief executive of a private group...

PENWALT announce five board appointments. Mr. St. Paul, previously sales director, takes over as marketing director. Mr. David E. Auty, becomes sales director...

Mr. Barry Male, formerly managing director of Blue Sky Holdings, has been appointed finance director of NEWS (UK). Mr. Male joined Blue Sky in 1979 as finance director before becoming managing director in 1985...

Mr. Robert Burns has been appointed director of finance and administration by ARDAHAL (UK). He was previously controller at Amthal's European headquarters...

Mr. John Card, formerly operations director for HUME PIPE, has been appointed managing director in place of Sir Robert Seton, who retired at the end of February...

EXCESS INSURANCE GROUP announce that Mr. Gordon Lindsay and Mr. James P. Noonan have joined the board. We have been asked to point out that, following the acquisition of C&I Energy Resources Consultants by Robertson Research, Mr. David R. Keith remains chairman and managing director, and Mr. David C. Wilson remains technical director of ERIC...

PENDING DIVIDENDS

Dates when some of the more important company dividend statements may be expected in the next few weeks are given in the following table. The dates shown are those of last year's announcements except where the forthcoming board meetings (indicated thus\*) have been officially notified. Dividends to be declared will not necessarily be at the amounts in the column headed "Announcement last year..."

Table with columns: Company Name, Date, Announcement last year, Date, Announcement last year. Lists various companies and their dividend dates.

RECENT ISSUES

EQUITIES

Table with columns: Issue Price, Amount, Date, Stock, High, Low, Change, Dividend Yield, P/E Ratio. Lists recent equity issues.

FIXED INTEREST STOCKS

Table with columns: Issue Price, Amount, Date, Stock, High, Low, Change, Dividend Yield, P/E Ratio. Lists fixed interest stocks.

RIGHTS OFFERS

Table with columns: Issue Price, Amount, Date, Stock, High, Low, Change, Dividend Yield, P/E Ratio. Lists rights offers.

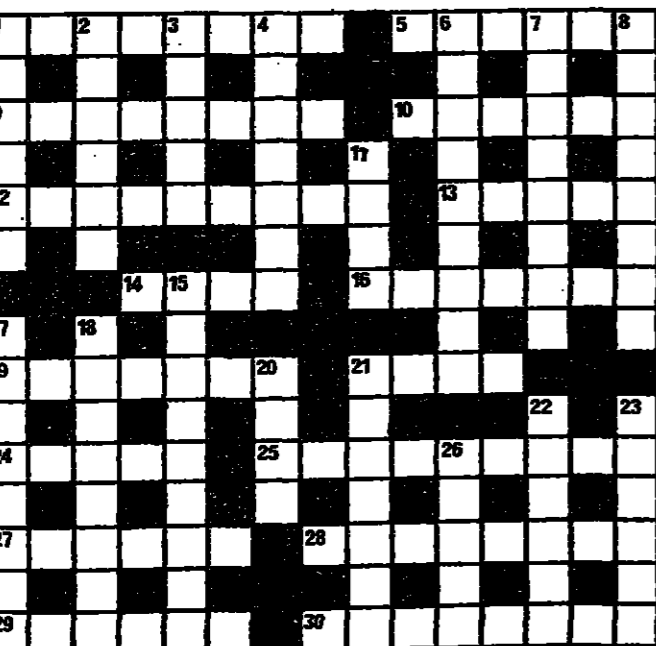
Remuneration data usually last day for dealing free of stamp duty. Figures based on prospectus estimates. Assumed dividend and yield based on prospectus or other official statements for 1985. Forward annualised dividend cover and p/e ratio based on prospectus or other official statements. \* Indicated dividends cover relates to previous dividend; n/a ratio based on latest annual earnings; f forecast; or estimated annualised remuneration; m merger or takeover; A allotment; n new issue; U unlisted securities market. \* Debt in under Rule 535 (3). \* Debt in under Rule 535 (4) (a).

FT UNIT TRUST INFORMATION SERVICE

AUTHORISED UNIT TRUSTS

Large table listing various unit trusts with columns for Name, Issue Price, Amount, Date, Stock, High, Low, Change, Dividend Yield, P/E Ratio. Includes sub-sections for AUTHORISED UNIT TRUSTS, FUND MANAGERS, and various trust names.

F.T. CROSSWORD PUZZLE No. 5,980



- 1 Do local magistrates sit on one (3-5)
2 Strait producing semi-crab on Thames at Oxford (6)
3 American disaster film (8)
4 Rose to settle in tract of high ground (6)
5 Ridge's prescription for cold shoulder? (9)
6 Bend in the Spanish curty (4)
7 Mark the place (4)
8 Air-inlet under the bridge (7)
9 Disappointment brings grimace after tea (7)
10 Stops goals (4)
11 Such walk would need a team following in Lakeland town (9)
12 Particular about his masque (9)
13 First major prophet to follow song of Solomon? (6)
14 Closure produced this junction from Wenceslas, changing his mind (8)
15 Burning forest takes time (6)
16 or energy used up the foliage (6)
17 Notices in medley-race covered walk (6)
18 Herringway's grave, some say (6)
19 Strange English lake (5)
20 Bond in the case of a lady (7)
21 Herd in grass kept under control (6)
22 Weapon-protector of a black-leg post (8)
23 New York pedestrians' way was liked for a change (8)
24 God of noise abatement? (4)
25 Pole ran wild in China (8)
26 Neuralgia of C. Asiatic origin? (8)
27 It is no longer called Port Said, we hear (8)
28 Retreat from one's territory (6)
29 torque damaged in the Circle Line? (7)
30 Outpouring of one in business (6)
31 Having the character of Leicester, for example? (6)
32 Cox, perhaps, could be very quiet in the drink (5)
33 The solution to last Saturday's prize puzzle will be published with names of winners next Saturday.

AUTHORISED UNIT TRUSTS & INSURANCES

Table listing various unit trusts and insurance products, including names like 'Scottish Widows' and 'Scottish Equitable', with columns for names, codes, and prices.

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INSURANCE, OVERSEAS & MONEY FUNDS

Table of financial data for various insurance and overseas funds, including sections for Scottish Life Investments, Sun Life Unit Assurance Ltd, and various international funds.

Table of financial data for insurance and overseas funds, including sections for Arthurton Securities (CI) Ltd, Sun Life Unit Assurance Ltd, and various international funds.

Table of financial data for insurance and overseas funds, including sections for Sun Life Unit Assurance Ltd, Sun Life Unit Assurance Ltd, and various international funds.

Table of financial data for money market and bank accounts, including sections for Money Market, Money Market Bank Accounts, and various bank services.

NOTES
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BRITISH FUNDS

Table of British Funds with columns for Name, Price, and Yield. Includes sub-sections for 'Shorts (Lives up to Five Years)', 'Five to Fifteen Years', and 'Over Fifteen Years'.

AMERICANS - Cont.

Table of American Stocks with columns for Dividend, Stock Name, Price, and Yield. Includes sub-sections for 'BANKS, HP & LEASING' and 'BEERS, WINES & SPIRITS'.

LONDON SHARE SERVICE

BUILDING, TIMBER, ROADS - Cont.

Table of Building, Timber, and Roads stocks with columns for Dividend, Stock Name, Price, and Yield.

DRAPERY & STORES - Cont.

Table of Drapery and Stores stocks with columns for Dividend, Stock Name, Price, and Yield.

INDUSTRIALS - Continued

ENGINEERING - Continued

Table of Engineering and Industrial stocks with columns for Dividend, Stock Name, Price, and Yield.

INDEX-Linked

Table of Index-Linked stocks with columns for Name, Price, and Yield.

CANADIANS

Table of Canadian stocks with columns for Dividend, Stock Name, Price, and Yield.

CHEMICALS, PLASTICS

Table of Chemicals and Plastics stocks with columns for Dividend, Stock Name, Price, and Yield.

DRAPERY AND STORES

Table of Drapery and Stores stocks with columns for Dividend, Stock Name, Price, and Yield.

FOOD, GROCERIES, ETC

Table of Food, Groceries, etc. stocks with columns for Dividend, Stock Name, Price, and Yield.

INT. GOVT AND O.E.A.S

Table of International Government and O.E.A.S stocks with columns for Name, Price, and Yield.

CORPORATION LOANS

Table of Corporation Loans with columns for Name, Price, and Yield.

DRAPERY AND STORES

Table of Drapery and Stores stocks with columns for Dividend, Stock Name, Price, and Yield.

HOTELS AND CATERERS

Table of Hotels and Caterers stocks with columns for Dividend, Stock Name, Price, and Yield.

INDUSTRIALS (Miscel.)

Table of Industrial (Miscellaneous) stocks with columns for Name, Price, and Yield.

COMMONWEALTH & AFRICAN LOANS

Table of Commonwealth and African Loans with columns for Name, Price, and Yield.

BEERS, WINES & SPIRITS

Table of Beers, Wines, and Spirits stocks with columns for Dividend, Stock Name, Price, and Yield.

BUILDING, TIMBER, ROADS

Table of Building, Timber, and Roads stocks with columns for Dividend, Stock Name, Price, and Yield.

ENGINEERING

Table of Engineering stocks with columns for Dividend, Stock Name, Price, and Yield.

AMERICANS

Table of American stocks with columns for Dividend, Stock Name, Price, and Yield.

FOREIGN BONDS & RAILS

Table of Foreign Bonds and Rails with columns for Name, Price, and Yield.

BANKS, HP & LEASING

Table of Banks, HP, and Leasing stocks with columns for Dividend, Stock Name, Price, and Yield.

DRAPERY AND STORES

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ENGINEERING

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AMERICANS

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March 24 1986

July 1985

INDUSTRIALS—Continued

Table of industrial stocks including companies like Johnson & Johnson, Merck, and various pharmaceuticals.

LEISURE—Continued

Table of leisure stocks including companies like Walt Disney World, Universal Studios, and amusement parks.

PROPERTY—Continued

Table of property stocks including real estate investment trusts and land development companies.

INVESTMENT TRUSTS—Cont.

Table of investment trusts including various equity and bond funds.

FINANCE, LAND—Cont.

Table of finance and land stocks including banks, insurance companies, and land trusts.

MINES—Continued

Table of mining stocks including various metal and coal mining companies.

MOTORS, AIRCRAFT TRADES

Table of motor and aircraft trade stocks including automotive and aerospace companies.

Commercial Vehicles

Table of commercial vehicle stocks including truck and bus manufacturers.

Components

Table of component stocks including parts and accessories for vehicles.

Garages and Distributors

Table of garage and distributor stocks including service and retail companies.

NEWSPAPERS, PUBLISHERS

Table of newspaper and publisher stocks including media and publishing companies.

PAPER, PRINTING, ADVERTISING

Table of paper, printing, and advertising stocks including related industry companies.

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SHIPPING

Table of shipping stocks including maritime and logistics companies.

SHOES AND LEATHER

Table of shoes and leather stocks including footwear and leather goods companies.

SOUTH AFRICANS

Table of South African stocks including companies from that region.

TEXTILES

Table of textile stocks including clothing and fabric manufacturers.

TOBACCO

Table of tobacco stocks including tobacco companies.

TRUSTS, FINANCE, LAND

Table of trusts, finance, and land stocks including investment and financial services.

PLANTATIONS

Table of plantation stocks including agricultural and land management companies.

OVERSEAS TRADERS

Table of overseas trader stocks including international trade companies.

MISCELLANEOUS

Table of miscellaneous stocks including various other companies.

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OVERSEAS TRADERS

Table of overseas trader stocks including international trade companies.

MISCELLANEOUS

Table of miscellaneous stocks including various other companies.

NOTES

Notes and commentary regarding the market and specific stocks.

PLANTATIONS

Table of plantation stocks including agricultural and land management companies.

OVERSEAS TRADERS

Table of overseas trader stocks including international trade companies.

Shand Committed to Construction Shand Ltd. Shand House Mallock Derbyshire DE4 3AF Tel: (0629) 734441

CONSTRUCTION CONTRACTS

Battersea leisure complex takes shape

BY JOAN GRAY, CONSTRUCTION CORRESPONDENT

SIR ROBERT McALPINE is in the running for an £18m contract for work at the planned leisure complex inside the old Battersea power station building on the banks of the Thames in West London.

Alton Towers already runs the second largest leisure park in the world—rivalled only by Disney World—in the grounds of its stately home at Alton Towers in Staffordshire.

Red Sea. Up to 2,600 people an hour can ride the white water in self-steering rubber tyre boats in what Mr Broome describes as "an experience for every member of the family: thrills and spills without the G forces for normally run out the ride for everyone except teenagers."

Construction work on the ride had to proceed on a fast track throughout bitter winter weather. Work started last August and was completed on schedule yesterday.

Leisure centre for New Malden

BERNARD SUNLEY & SONS has been awarded four contracts totalling £8m in Buckingham, Harlow, Croydon and New Malden.

The Royal Borough of Kingston-upon-Thames has awarded a £2.9m contract to build the village centre at Bagdon Rd, New Malden, Surrey. The community and sports centre development incorporates a 25-metre swimming pool, teaching pool, community hall, cafe, bar, and various adult education accommodation together with voluntary services premises.

Town centre development for Ayr

Contracts together worth over £20m have been won by BALFOUR BEATTY companies.

The largest order is from London and Caithness which has awarded Balfour Beatty Construction a £2.2m contract to construct a two-storey reinforced concrete-framed building to provide a shopping centre and mail, car parking, service yard and landscaping are included in the contract which is due for completion in September 1987.

Accrington shopping mall scheme

Fitting out Broadgate

ROSSER & RUSSELL BUILDING SERVICES has been awarded three contracts worth a total of £8.5m. The primary contract awarded by Bovis Construction is for £4m for fitting out a building on the Broadgate development at Liverpool Street for American Express.

BALFOUR BEATTY BUILDING

has been awarded four contracts totalling £2.56m. London and Metropolitan Estates has placed a £1.7m contract for construction of a four-storey office building totalling 25,100 sq ft at London Rd, Camberley, on the old post office site.

Accrington shopping mall scheme

Accrington's largest shopping development at the Arndale Centre on which CONDER PROJECTS MIDLANDS of Burton-on-Trent, part of the Conder Group, began work in February for client Town & City Properties, has already attracted High Street names such as John Menzies, Dixons, Dorothy Perkins and Woolworths are already



providing 200 new permanent jobs. The two-storey Mall will house 29 shops in an L-shape and will have a vaulted glass roof. There will be a multi-storey car park for 600 cars. The Mall will be linked to the existing Arndale block, where Marks & Spencer and Woolworths are already

located. Access will be by a new road taken off the Hyndburn Link road to the M65 motorway. The importance of this project to Accrington was recognised by the Department of the Environment which is making a grant of £1.75m.

JOHN WILLMOTT CONSTRUCTION has been awarded a contract worth around £1m by the Automobile Association for a transport depot at South Mimms near Potters Bar.

JAMES LONGLEY & CO is constructing a £1.9m office building for the Lazard Property Unit Trust at Station Rd, Redhill.

The University of Buckingham has appointed Sunley to extend its existing science laboratory and build three-storey residential accommodation with an overall contract value of about £750,000.

A £1.1m management contract lasting 12 months has been awarded to HENRY BOOT NORTHEN for a 3,000 sq metres extension to the Naxell Corporation's manufacturing and packaging factory at Flanshaw Way, Wakefield.

The steel portal frame construction will feature profiled metal cladding and decking, and a complex interface with the existing building to maintain production throughout the building operations. Offices and canteen facilities are included. Henry Boot has also started work on a local pumping station at Lundwood sewage treatment works, off the A628 Pontefract road, near Barnsley. The 71-week contract is worth over £700,000.

GLASS GLOVER GROUP p.l.c. (Registered in England No. 765435) SHARE CAPITAL. Issued and now being issued, fully paid. 1,000,000 Ordinary Shares of 5p each 5,154,1. 10,000,000 6% Cumulative Convertible Redeemable Preference Shares 2000 of £1 each 10,000,000. 11,000,000 10,671,541.

ZAMBIA COPPER INVESTMENTS LIMITED RESULTS FOR THE HALF-YEAR ENDED DECEMBER 31, 1985. Revenues: Interest and other income 1,117. Expenses: Administration expenses 286, Exchange (gain) loss (note 1) (26).

Notes: 1. The exchange losses in the prior periods were mainly attributable to the depreciation of the Zambian kwacha and Zimbabwean dollar. 2. The Corporation incurred costs of US\$1,108,000 for the half-year to December 31, 1985 (1984: US\$714,000) under guarantees given to De Beers Consolidated Mines Limited relating to Botswana RST Limited (BRST) and BCL Limited (BCL) which are considered as irrecoverable and have accordingly been treated as extraordinary items.

FINANCIAL DIARY FOR THE WEEK. The following is a record of the principal business and financial engagements during the week. The board meetings are mainly for the purpose of considering dividends and official indications are not always available whether dividends concerned are interim or final.

IBM Credit Corporation (Incorporated in the State of Delaware, U.S.A.) 5 3/4% Notes Due March 26, 1991. The following have agreed to purchase the Notes: Salomon Brothers International Limited, Mitsubishi Finance International Limited, Credit Suisse First Boston Limited, Morgan Guaranty Ltd, Nomura International Limited, Banque Bruxelles Lambert S.A., Daiwa Europe Limited, Fuji International Finance Limited, Mitsubishi Trust & Banking Corporation (Europe) S.A., Nippon Credit International (Hong Kong) Limited, Swiss Bank Corporation International Limited, Union Bank of Switzerland (Securities) Limited.

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WORLD STOCK MARKETS

AUSTRIA

Table of Austrian stock market data including company names like Adelsbank, BAWAG, and various indices.

GERMANY

Table of German stock market data including company names like Deutsche Bank, Daimler-Benz, and various indices.

AUSTRALIA

Table of Australian stock market data including company names like Adelaide Steamship, BHP, and various indices.

JAPAN

Table of Japanese stock market data including company names like Dai Nippon, Daiwa Bank, and various indices.

CANADA

Table of Canadian stock market data including company names like Alcan, Bell Canada, and various indices.

TORONTO

Table of Toronto stock market data including company names like Alcan, Bell Canada, and various indices.

Stock

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DENMARK

Table of Danish stock market data including company names like Carlsberg, Danfoss, and various indices.

SPAIN

Table of Spanish stock market data including company names like Banco de España, and various indices.

SOUTH AFRICA

Table of South African stock market data including company names like Anglo American, and various indices.

HONG KONG

Table of Hong Kong stock market data including company names like Bank of China, and various indices.

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NORWAY

Table of Norwegian stock market data including company names like Aker, and various indices.

FRANCE

Table of French stock market data including company names like Air France, and various indices.

SINGAPORE

Table of Singapore stock market data including company names like Overseas Chinese, and various indices.

ITALY

Table of Italian stock market data including company names like Fiat, and various indices.

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NETHERLANDS

Table of Dutch stock market data including company names like ABN-Amro, and various indices.

NEW YORK

Table of New York stock market data including company names like IBM, and various indices.

INDICES

Table of various stock market indices including Dow Jones, S&P 500, and others.

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Table of stock market data including company names like Alcan, Bell Canada, and various indices.

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Table of stock market data including company names like Alcan, Bell Canada, and various indices.

NEW YORK ACTIVE STOCKS

Table of active stocks in New York including company names like AT&T, IBM, and others.

Stock

Table of stock market data including company names like Alcan, Bell Canada, and various indices.

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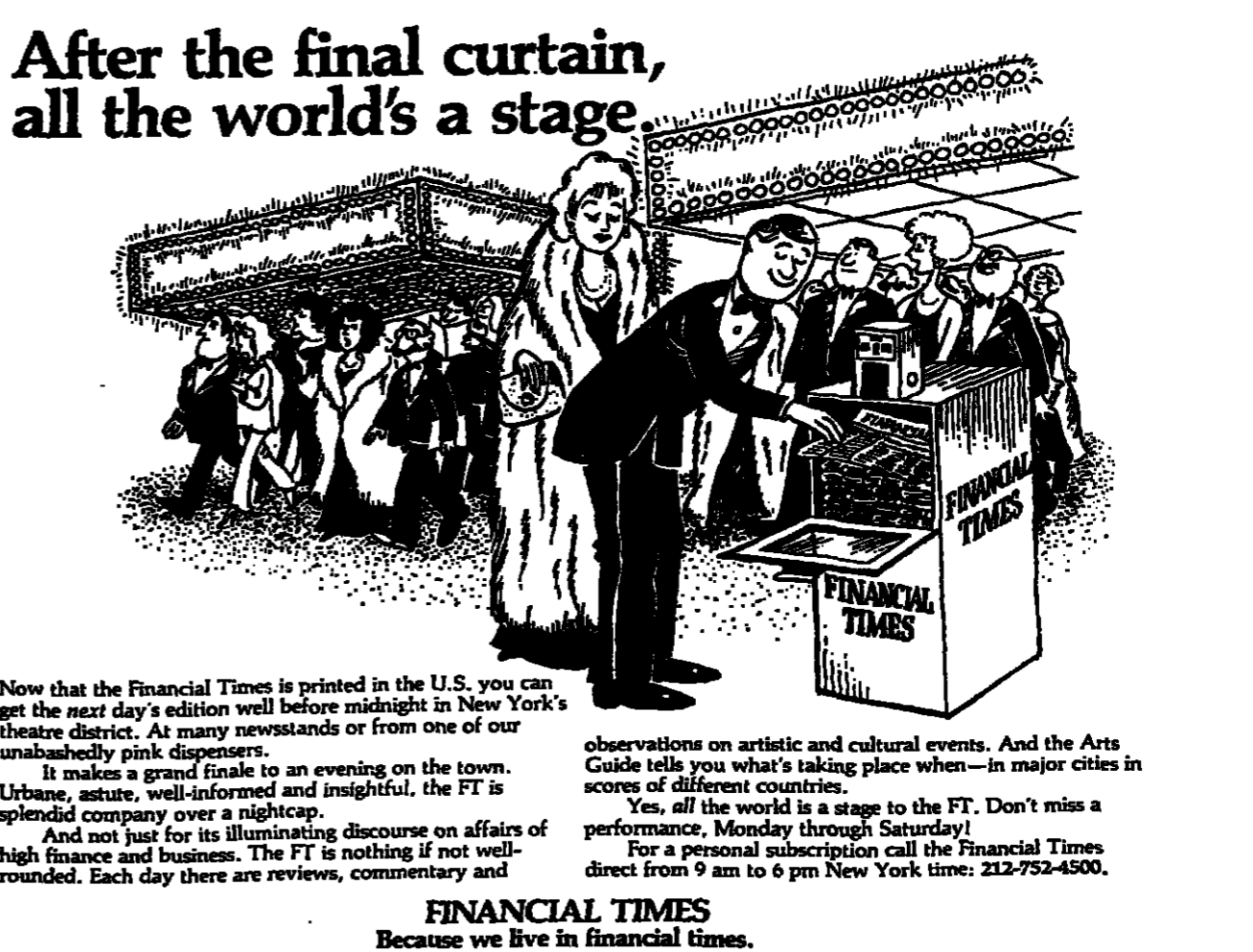
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After the final curtain, all the world's a stage. Now that the Financial Times is printed in the U.S., you can get the next day's edition well before midnight in New York's theatre district.

NEW YORK STOCK EXCHANGE COMPOSITE CLOSING PRICES

Closing prices, March 21

Main table of stock prices with columns for stock name, price, and change. Includes sub-sections for 'D D D' and 'E E E'.

NYSE COMPOSITE CLOSING PRICES

Table of NYSE Composite Closing Prices, including columns for stock symbols, prices, and changes. Includes sub-sections like 'Continued from Page 38' and 'Over-the-Counter'.

AMEX COMPOSITE CLOSING PRICES

Table of AMEX Composite Closing Prices, including columns for stock symbols, prices, and changes. Includes sub-sections like 'Over-the-Counter'.

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Advertisement for 'Over-the-Counter Nasdaq market' with contact information for Nasdaq.

CURRENCIES, MONEY and CAPITAL MARKETS

FOREIGN EXCHANGES

Attention turns to sterling

BY COLIN MILLHAM

£ IN NEW YORK

Sterling became the centre of attention on the foreign exchanges last week, as the Bank of Japan showed signs of anxiety about the fall of the dollar against the yen.

Against a nervous and uncertain background for the dollar, attention has switched to sterling. London interest rates remain attractive in spite of last week's cut of 1 per cent in clearing bank base rates.

Oil remains a major uncertainty, but last week's Opec meeting restored some confidence in the cartel, and its ability to prevent oil prices moving down towards \$10 a barrel.

CURRENCY MOVEMENTS

Table showing currency movements for various currencies like Sterling, US dollar, Canadian dollar, etc., with columns for Mar. 21, Mar. 22, and Mar. 23.

CURRENCY RATES

Table showing currency rates for various countries including Argentina, Brazil, Canada, etc., with columns for Mar. 21 and Mar. 22.

POUND SPOT - FORWARD AGAINST POUND

Table showing pound spot and forward rates for various terms like 1 month, 3 months, 6 months, 12 months.

DOLLAR SPOT - FORWARD AGAINST DOLLAR

Table showing dollar spot and forward rates for various terms like 1 month, 3 months, 6 months, 12 months.

FORWARD RATES AGAINST STERLING

Table showing forward rates against sterling for various currencies like Dollar, D-Mark, French Franc, etc.

EURO-CURRENCY INTEREST RATES

Table showing Euro-currency interest rates for various currencies and terms like 1 month, 3 months, 6 months, 12 months.

MONEY MARKETS

Further pressure resisted

The Bank of England resisted pressure for lower London interest rates last week, but only after conceding a cut of 1 per cent to 11 per cent in bank base rates on Wednesday.

UK clearing banks base lending rate 11 1/2 per cent since March 19. The strength of sterling enabled the authorities to cut dealing rates Wednesday morning, heralding a reduction in base rates.

WEEKLY CHANGE IN WORLD INTEREST RATES

Table showing weekly change in world interest rates for various locations like London, New York, Brno, etc.

BANK OF ENGLAND TREASURY BILL TENDER

Table showing Bank of England Treasury Bill tender details for March 21 and March 14.

FT LONDON INTERBANK FIXING

Table showing FT London interbank fixing rates for various terms like 3 months, 6 months, 12 months.

MONEY RATES

Table showing money rates for various currencies like Frankfurt, Zurich, Amsterdam, etc.

LIFE LONG GILT FUTURES OPTIONS

Table showing life long gilt futures options with columns for Strike, Call, Put, Last, etc.

LONDON

Table showing London market data for various indices like 20-year 12% notional gilt, FT-SE 100 index, etc.

CHICAGO

Table showing Chicago market data for US Treasury bonds, US Treasury bills, etc.

EXCHANGE CROSS RATES

Table showing exchange cross rates for various currencies like DM, Yen, S Fr, etc.

WestLB

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MINORCO

Minerals and Resources Corporation Limited

RESULTS FOR THE HALF-YEAR ENDED DECEMBER 31, 1985

Highlights: Earnings from operations for the first six months were 45% higher than the corresponding prior period.

Table showing consolidated unaudited US\$ millions for 1985 and 1984, including earnings from operations, net earnings, etc.

As indicated in the 1985 Annual Report, it is anticipated that earnings from operations during the year ended June 30, 1986 will be materially higher than the US\$45 million of earnings achieved in the previous year.

Interim dividend: The board has declared an unchanged interim dividend of 6 US cents a share in respect of the record on April 11, 1986.



# FINANCIAL TIMES SURVEY

# London's Airports

The new £200m Terminal Four at Heathrow, to be opened by the Prince and Princess of Wales on April 1, is the first result of an £800m-plus programme of modernisation and expansion at airports in London and the South East. The investment will gear the region for future continued growth in air travel to the mid-1990s and beyond.

## Easing strains on the system

By Michael Donne  
Aerospace Correspondent



Heathrow's new Terminal 4 takes shape. It raises the airport's capacity to 38m passengers a year

A NEW ERA in the history of London's airports will begin on April 12 when the £200m fourth terminal at Heathrow becomes operational, raising that airport's capacity from the present 30m passengers a year to at least 38m.

A little more than a year later, in the summer of 1987, another major development, the £200m second (North) terminal at Gatwick now under construction will open for business, raising that airport's potential capacity from the present 18m passengers a year to 25m.

Together, these two developments, among the biggest civil engineering projects undertaken anywhere in the UK in recent years, will do much to ease the growing strains on the London

airports system until the next major phase of development—the equally expensive and extensive £290m expansion of Stansted airport in Essex from its present capacity of 2m passengers a year to between 7m and 8m—becomes operational in the early 1990s.

Behind all these developments lies the fact that inexorably air travel has continued to expand, not just in the UK, but throughout the world, and that for the foreseeable future that expansion is likely to continue, unless some unexpected economic difficulties arise. Even during the recession of the early 1980s, air transport suffered only to the extent that in some parts of the world—North America and Western Europe—the rate of

growth slackened (traffic did not actually decline) while in some other parts of the world, growth continued at substantially high annual rates, especially in South-East Asia and the Far East.

Currently, all the indications are that, for the world as a whole, the average annual rate of growth at least through the rest of this decade is likely to lie somewhere between 5 and 7 per cent, although actual growth rates may vary widely in different regions.

The UK, as one of the world's great international air transport generators, is bound to share in that expansion. While some part of the growth will be at the regional airports, especially the larger ones such as Man-

chester where determined efforts are being made to exploit their capabilities, the bulk of the international traffic to and from the UK will be concentrated on the airports in London and the South-East.

That part of the UK is a major conurbation in its own right—one of the biggest in the world—while London is the centre of government and of much of the nation's industrial and commercial life, and a major centre for international tourism.

While undeniably the regions have a major role to play in the future development of all UK air transport, and need to be encouraged in their own development strategies, the fact remains that London and the

South-East will remain the major attraction. All of the expansion and modernisation now being undertaken or contemplated at London's airports is designed to ensure that the facilities can not only keep pace with demand, but where possible can remain ahead of it.

But providing an adequate airport infrastructure by itself is not enough: to manage it competently is equally essential. The British Airports Authority has the basic responsibility for running most of London's airport system—Heathrow, Gatwick and Stansted—Luton and Southend being local authority owned, while the projected smaller central London airport (short take-off and landing)

port) is being privately developed in the Docklands. The BAA is widely recognised as having done an excellent job, often under extremely difficult political and economic circumstances.

The authority has been consistently profitable throughout its 20-plus years of existence, and there is no reason to believe that it could not, and would not remain so if it continued under State control. The current Government's plan to privatise the authority later this year or early next has nothing whatever to do with any pressing need to revise the structure and methods of managing the authority, or to correct any obvious faults in the airports system. It is primarily a political

objective as part of the Government's overall ambition to roll back the frontiers of the state in commercial and industrial life.

But given that privatisation is going to occur, both the authority itself and the air transport industry as a whole, can use that opportunity to reshape the system where either possible or desirable, so as to gear it for the expansion anticipated throughout the remaining years of this century.

Essential elements in that process include reshaping the structure of the authority itself into a holding company with seven separate subsidiary companies running each of its seven airports (the others outside London being Glasgow, Prestwick, Aberdeen and Edinburgh). Defining the precise structure is a matter for discussion between the authority and the Government, while the Airports Bill giving effect to the changes moves through Parliament, as outlined later in this survey.

But one element in the process that is currently the subject of considerable debate is whether there should now be a much more fundamental revision of the distribution of air traffic in London and South-East, with perhaps a tougher and more extensive system of Government direction of charter traffic to the expanded Stansted, relieving Gatwick to enable it to develop more as a scheduled airport along the same pattern as Heathrow.

Some airlines have suggested this as the proper way forward, whereas others have argued just as vigorously that all the airports in the London system should be allowed to develop as "hubs" in their own right, with a "mix" of traffic, both scheduled and charter.

The British Airports Authority itself, in response to a consultation document issued by the Civil Aviation Authority, has argued strongly that the present arrangements for distributing air traffic between London's airports have worked

well and should continue. The existing pattern, involving reliance on the airlines' own scheduling committees to allocate landing and take-off "slots" at the airports, together with the action of market forces supported by an appropriate pricing policy, involving perhaps differential rates at different airports, remains the best way forward.

The authority argues that the growing shortage of suitable "slots" on a consistent daily basis at Gatwick, and the improving road network serving Stansted, is likely to encourage the development by airlines of both scheduled and charter services at Stansted, thereby relieving pressures on both Heathrow and Gatwick. This could be assisted by liberal Civil Aviation Authority licensing policies for new services at Stansted and Luton.

The authority's view would appear to be supported by experience in the US, where an increasing number of airports are expanding rapidly under the "hub" system, with services of all types radiating in all directions—a pattern that is also increasingly being adopted on the Continent of Europe.

But apart from questions of redistribution of traffic, there are other problems to be faced in settling the future of the London airports system. These include those of the environment—noise and pollution from aircraft, and the growing road congestion, especially around Heathrow.

Earlier proposals to restrict the growth of traffic at Heathrow by the imposition of a ceiling of 275,000 air transport aircraft movements a year at that airport (and thus ease the noise burden) foundered because the ceiling was overtaken by events before it could be introduced: in 1985, there were 283,400 such movements, a rise of 3.8 per cent over 1984, and a further expansion seems likely in 1986.

But it is clear that a close watch will need to be kept on the noise situation at all the

CONTINUED ON PAGE 2



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London's Airports 2

A considerable variation in projections for the number of passengers expected in the 1990s has posed a dilemma for planners.

Steady expansion set to continue

£500m flotation on the way

The BAA  
MICHAEL DONNE

Patterns of growth  
MICHAEL DONNE

THE FOUR main airports in the London area—Heathrow, Gatwick, Stansted and Luton—collectively handled more than 48m passengers during 1985, or about 7 per cent more than in the previous year, reflecting the continuing recovery of UK air transport from the recession of the early 1980s.

Within that total, Heathrow alone handled close to 31.3m passengers, or 7.3 per cent more than in 1984, with a volume of 283,400 air transport aircraft movements (up 3.8 per cent), indicating that the airport was already last year at saturation level and thus more than justifying the decision to build the new fourth terminal at that airport which becomes operational on April 12.

Gatwick handled 6.7 per cent more passenger traffic at a total of close to 14.8m, also indicating that the airport was also coming close to its current maximum capacity of 16m a year.

All the indications are that this growth will continue into the foreseeable future, at an average annual rate of between about 5 to 7 per cent, unless there are any unforeseen economic difficulties.

Encourage

Although the recent fall in oil prices has been interpreted by some aviation observers as likely to encourage lower air fares and thus stimulate traffic, the general view is that rising air transport costs in other directions (such as labour and re-equipment costs) will absorb the benefits of falling fuel prices (although some airlines claim their fuel bills have gone up, not down), and that in any event the volatility of fuel prices in the long term is likely to encourage caution by the airlines and preclude any early significant reductions in fares.

Nevertheless, over the long term, that is at least up to the mid-1990s, the forecast is for a steady rise in the volume of air traffic serving the London and South-East region of the UK.

The most recent detailed forecasts, prepared by the Department of Transport (July, 1984), show that, using 1982 as a base year with 39.7m passengers at airports in the London and South-East area, by 1990, traffic will have grown to between 54.5m (the low forecast) and 66.5m (the high forecast), out of total UK passenger traffic for the UK as a whole of between 80.1m and 100.8m.

This represents an estimated annual growth rate of between 4 per cent and 6.7 per cent. The



1985 results would appear to indicate that this forecast is likely to prove reasonably accurate, with a mean of about 60m passengers a year by 1990.

For the period 1990-95, a forecast expansion of between 3.8 per cent and 6.2 per cent a year will yield traffic by the mid-1990s of between 64.9m and 89.8m. For the remaining years of the century, a growth rate of between 2.7 per cent and 5.6 per cent is forecast, yielding traffic by the year 2000 of between 74.1m and 118m, out of a total for the country as a whole of between 105.8m and 172.8m.

The extraordinarily wide spread of the low and high forecasts indicates the difficulties involved in traffic forecasting, and equally highlights the dilemma that the planners both in Government and the British Airports Authority have had in making adequate provision for future air transport development.

On the one hand, it is possible to set the sights too low, with the result that traffic could be squeezed into inadequate facilities with all the attendant hazards and complaints. On the other, it is possible to aim too high, with the result that while traffic is adequately catered for, there are accusations of unnecessary spending.

On balance, experience shows that it is generally better to overbuild rather than underbuild. When Gatwick was first developed as a major airport in the 1950s, it was

criticised as being a monstrous "white elephant" in the London airports system.

Recent years have demonstrated clearly that, without it, the London airports pattern would have faced disaster; the inability to cope would have provided a bonanza for foreign airports that would have swiftly filled the gap.

The British Airports Authority's own planners have been working on the basis of passenger traffic of between 50m and 85m a year at the London and South-East airports by 1995, with further growth thereafter.

It is on that basis that they have developed the fourth terminal at Heathrow, raising that airport's capacity from the

present 30m to at least 38m a year with the possibility of squeezing it up to about 42m a year by getting more traffic into the central terminal area) while they are also building the second (North) terminal at Gatwick, to become operational in the summer of 1987, raising that airport's capacity from the present 16m passengers a year to 25m.

At the same time, the plan now is for Stansted, in Essex, to be developed as a result of Parliamentary approval from its present capacity of about 2m a year to between 7m and 8m a year in a first phase of expansion, with eventual further development to some 15m a year if demand justifies, and the

longer-term possibility of even pushing it up to 25m a year on the single runway.

This BAA development programme alone will generate available capacity by the mid-1990s of some 75m passengers a year at the BAA's airports alone.

Expansion

The additional capacity required to meet the overall mid-1990s target of 80m plus will come from an expansion of Luton Airport (which is local authority-owned) to about 5m passengers a year from the present capacity of 2.5m, with perhaps another 1m being handled by the London Stolport (short take-off and landing airport) to be built in the Docklands area east of the City of London.

From such calculations, it can be seen that if the forecasts are accurate, it is going to be a tight squeeze, even taking the medium level of estimated traffic growth for the mid-1990s. If the actual growth rate moves towards the high forecast of 89.8m for 1995, it would seem that further development of Stansted beyond the initial 7m to 8m now contemplated to a full 15m will become necessary.

Many aviation observers believe that such a development will be inevitable anyway in the second half of the 1990s, and that the time may well come when Stansted will have to be pushed even further, up to 25m passengers a year capacity by the end of the century, the maximum that can be absorbed

on only one runway, as at Gatwick.

Beyond that, there are two alternatives. One is to consider the development of a fifth terminal at Heathrow, catering for some 15m passengers a year and increasing the capacity of that airport to between 53m and 57m passengers a year. This is the option which the Government has kept open in its White Paper on Airports Policy (as indeed it also has on the possible expansion of Stansted to 25m passengers a year).

Most of them, if not all, are likely to experience a major expansion of their activities during the rest of this century.

Department of Transport forecasts for growth in passenger traffic at UK airports for this period (in the chart below) show a wide variation between the "low" and the "high" forecasts.

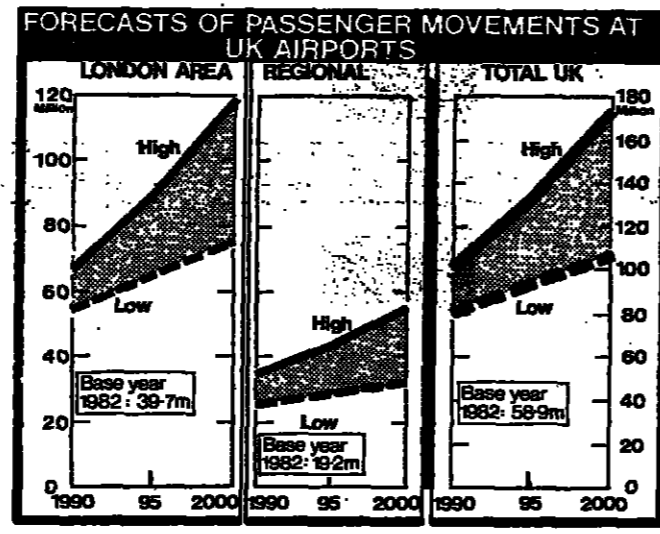
This primarily reflects the difficulties of estimating traffic so far ahead, but even on the basis of the mean figures, traffic expansion will be strong.

This debate lies well into the future. It will not become an urgent consideration at least until the early 1990s, by which time the future trend of air traffic to the end of the century will be seen more clearly. But it would be wrong for anyone at this stage to suggest that such a debate will never take place. Some of the government of the day will have to grasp the nettle, if the inexorable growth of air transport continues.

For the immediate future, however, the planners have their hands full in coping with the development programmes already approved, which have themselves taken many years of struggle to achieve against formidable opposition.

The actual results for 1985—a gain of 7 per cent in air passenger traffic at the London and South-East airports—indicated that demand for air travel was running strongly. The early results for 1986 show that it still is. In January, the three BAA airports collectively handled more than 28m passengers, a gain of 8.5 per cent over the corresponding month a year earlier. Heathrow gained 4.8 per cent to over 2.2m, while Gatwick gained 11.9 per cent to 870,500.

Only Stansted showed a decline, of 12.3 per cent, to 26,200 passengers, the clearest possible illustration of the under-utilisation of that airport and reflecting its use still essentially for seasonal holiday charter traffic. To develop Stansted as a scheduled service airport is a change which the air transport industry as a whole must work to achieve.



Easing strains on the system

CONTINUED FROM PAGE 1

London airports, as traffic expands. The Government has already said that it will introduce a movements limit at Stansted, subject to Parliamentary control over subsequent increases.

Although the Government will also continue with its policy of restricting night jet flights, it does not propose to ban them entirely. Thus, there are fears that the current periods of night noise curfews may be eroded as so-called "quieter" jet aircraft come into service. The fact is that there is no "quiet" jet airliner as such; the latest Jumbo jet may have modern engines that make less noise than those on an earlier type of the same aircraft, but they still make a great deal of noise.

Moreover, all aircraft operating at night are objectionable to residents in communities

round airports who would perhaps be tolerant of such noise during daylight hours.

While it has to be recognised that airports are expensive investments that will be increasingly required to make money, it must also be accepted that London's airports will in itself result in an increased volume of continuous noise. Efforts to make a greater number of "slots" available at Heathrow in particular by an erosion of night curfew hours by so-called "quieter jets" should be resisted.

Local residents and anti-noise groups round Heathrow and Gatwick point out that if there needs to be any direction of air traffic at all in the London airports system, it should be achieved by directing airlines seeking new or additional "slots" to go to Stansted, rather than by eroding existing night curfews by permitting any kind of jet operations in the night

hours where hitherto it has not been allowed.

These environmental considerations highlight the biggest unsettled issue in the whole debate on the development of London's airports: whether eventually there should be a fifth terminal at Heathrow, or whether the under-utilised Stansted should be further expanded to a full 15m passengers a year, and then to 25m, if demand requires, in the mid to late 1990s.

It is a topic that has been shelved by the Government for the immediate future, largely because the need for any such decision has not yet arisen, and because the immediate problem of settling whether or not to develop Stansted to a limited 7m to 8m passengers a year has proved difficult enough politically.

But experience suggests that at some time the debate will surface again, perhaps in the early to mid-1990s. Many believe it would have been

politically more sensible to have dismissed now any notions of a fifth Heathrow terminal once and for all, relying instead on the full development of capacity at Stansted to the maximum of a single runway—25m passengers a year—and insisting on the development of a "hub" system of development at all three major airports.

As it stands, all that the Government has achieved is settlement of the long-running problem of whether or not to develop Stansted at all. That it has settled for the limiting initial target of 7m to 8m passengers a year is perhaps victory enough for the air transport industry for the time being.

But no one should be under any illusions that the matter is settled for ever. By the early 1990s, as traffic growth continues, the arguments for either the further development of Stansted, or the fifth terminal at Heathrow will re-emerge.



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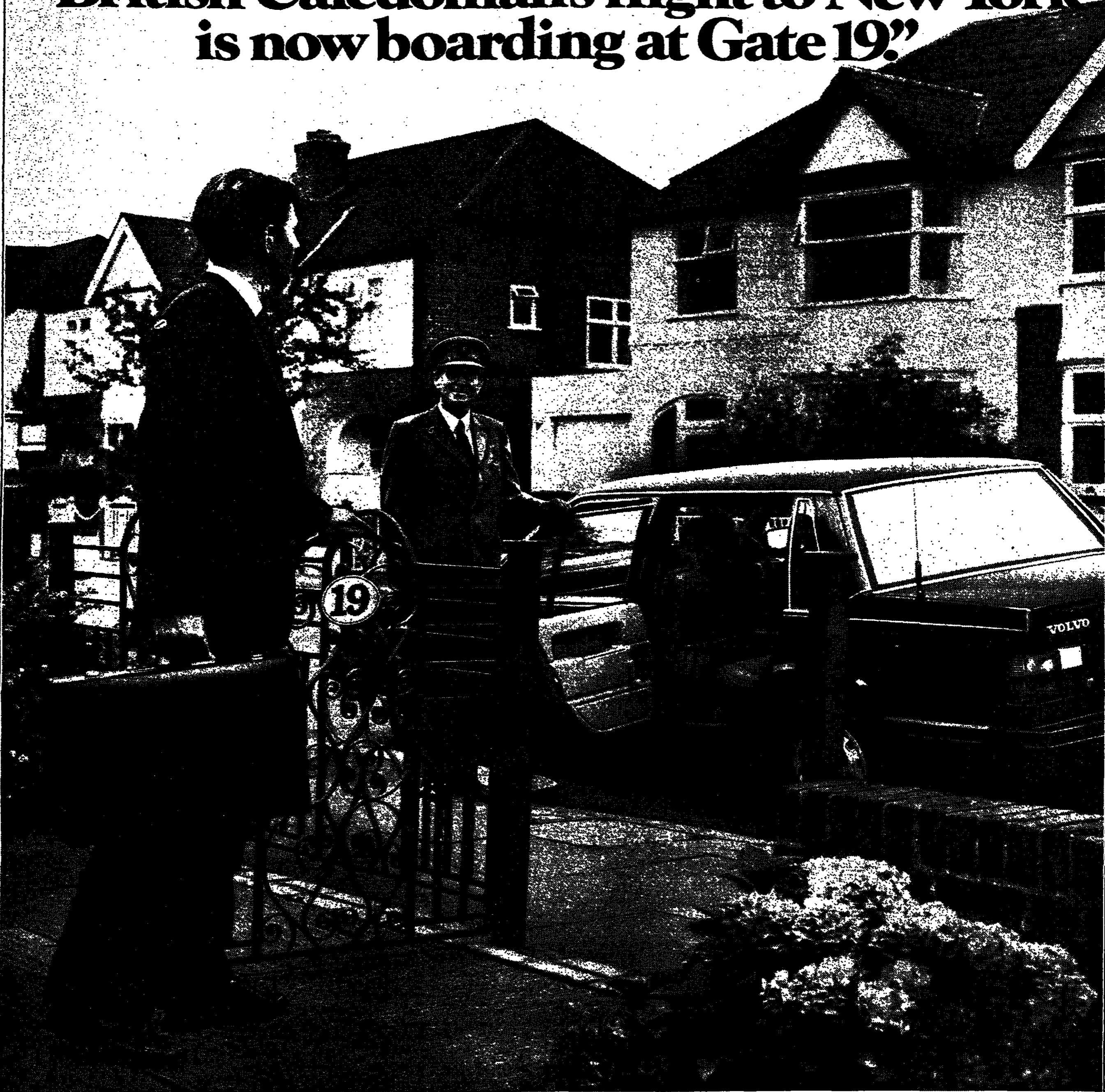
please contact Dick Allen, Managing Director, French Kier Construction Limited, Tempersford Hall, Sandy, Bedfordshire, SG19 2BD. Tel: Biggleswade (0767) 4011.



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